DOCUMENT RESUME

ED 354 345 CE 063 057

AUTHOR	Stevens, David W.; And Others
TITLE	Measuring Employment Outcomes Using Unemployment Insurance Wage Records.
INSTITUTION	Research and Evaluation Associates, Inc., Washington, DC.
SPONS AGENCY	Office of Policy and Planning (ED), Washington, DC.
PUB DATE	31 Dec 92
CONTRACT	LC89001001
NOTE	233p.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC10 Plus Postage.
DESCRIPTORS	Data Analysis; Databases; Data Collection; Data Interpretation; Data Processing; Demonstration Programs; Education Work Relationship; *Employment Patterns; *Employment Statistics; Federal Government; Information Utilization; *Payroll Records; Postsecondary Education; Program Implementation; Recordkeeping; *State Programs; *Unemployment Insurance; Users (Information); Vocational Education; *Vocational Followup; Wages

ABSTRACT

This report presents findings of a demonstration project that tested the concepts and applications of linking student records using social security numbers with state unemployment insurance (UI) wage and other data sources. It also contains information of value to policymakers, state and local administrators, practitioners, and consumers of postsecondary vocational education. Chapter I explores the value of wage data sources in examining trends regarding former students in the workplace. Chapter II provides the historical perspective and looks at the changing legislative environment and factors influencing the use of state UI wage data. Chapter III identifies needs of various audiences for employment and earnings information. Chapter IV describes concepts tested by the demonstration project as well as the data sources and elements used. Chapter V presents findings from the two-state demonstration to illustrate how wage data can be used and presented. Chapter VI provides a profile of the strength of the longitudinal perspective. Chapter VII discusses five steps for state implementation of a system to link school-based information with state UI and other state and federal wage data records: (1) plan and determine data priorities, (2) identify state and federal administrative data sources, (3) make data collection decisions, (4) develop data processing procedures, and (5) conduct data analysis. Appendixes include 91 endnotes and a discussion of the differences between outcome measures and performance standards. (YLB)

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Measuring Employment Outcomes Using Unemployment Insurance Wage Records

December 31, 1992

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December 31, 1992

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ACKNOWLEDGMENTS

Over two decades of learning about administrative data sources lie behind this report. Many people provided guidance and encouragement along the way. More recently, school administrators in two states--who were promised anonymity--agreed to cooperate fully in the Demonstration Project through which the data in this volume were acquired and processed. State Employment Security Agency personnel in each state provided the wage record data that serve as the core of the archival approach described in this volume. To these mentors and necessarily anonymous colleagues we express grateful appreciation.

Two Federal agencies contributed to the assembly of the 22 data sets that were processed. Dr. Phillip A.D. Schneider, Assistant Director for Workforce Information, in the U.S. Office of Personnel Management, and his colleagues Andrew Klugh and Ben Clayton, provided access to unit-record information about Federal civilian employees. Kenneth C. Sheflen, Director of the U.S. Department of Defense's Manpower Data Center, and his colleague Stewart Reiman, provided comparable information for military personnel who had been former students in the two states.

Robert L. Crosslin, American University, and Richard J. McHugh, Director of the Center for Economic and Management Research at the University of South Florida, were consultants to the study and helped to acquire the data needed to investigate the importance of local economic conditions as factors in understanding educational outcomes.

Most data processing and analytical support services were ably provided by Debra Hoover and James Warren, both affiliated with the University of Baltimore's Regional Employment Dynamics Center. Without their expertise and dedication, data extraction and presentation could not have been completed in a timely manner.

Over the course of the three year study, several other staff members of Research and Evaluation Associates helped to collect data, analyze data, and prepare preliminary reports. They are: Richard White, Brenda Lester, Patricia Perry, Kim Hrabak, Zenzi Hopkins, and Hope Reed.

Finally, this project could not have been completed without the leadership and guidance of our project officer, David Goodwin, in the Office of Policy and Planning, U.S. Department of Education. His steadfast commitment to this effort made the work professionally satisfying and personnally enjoyable. We thank him.

David W. Stevens
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EXECUTIVE SUMMARY

In vocational education, as in other areas of education, assessment of student performance is increasingly viewed as a way to measure program quality and to motivate program improvement. Job placement and earnings are two of the basic outcomes of interest in any program designed to prepare students for work. When measuring these outcomes, educational institutions have traditionally collected such information through surveys of their graduates, but the results reported are widely considered to be unreliable. Policymakers and program administrators have sought new ways to improve the measurement of employment outcomes for students participating in vocational programs.

Federal education policy is moving rapidly toward an emphasis on measuring performance as an indicator of program accountability. The Carl D. Perkins Vocational and Applied Technology Education Act requires states to develop performance measures and standards for vocational education at the secondary and postsecondary levels. The recently reauthorized Higher Education Act strengthens the role of states in reviewing eligibility of institutions seeking to participate in Federal student aid programs. Institutions subject to review are required to meet established state standards, which in the case of programs whose objectives are preparation for employment include assessment of students' earnings and employment.

States are also instituting their own systems of accountability. These systems often entail some assessment of the employment experience of students enrolled in vocational programs. For example, in Florida, programs are required to attain a 70 percent job-placement rate to remain eligible for state vocational education funds. Tennessee has a system of performance-based funding for higher education that includes, for public two-year colleges, a measure of the program's job placement rate. In Washington, the State Board for Community College Education publishes findings on the vocational outcomes for graduates of community college programs.

This study was undertaken to explore the feasibility of using state unemployment insurance (UI) wage record data and other routinely maintained state and Federal data to measure the labor market performance of students enrolled in proprietary institutions and community colleges. Unlike school surveys, the UI data do not suffer from low response rates (over 90 percent of civilian employees are covered), are not subject to faulty recall by respondents, and entail no new data collection burden on respondents.

Methods

Using social security numbers, the study matched student and employment records of approximately 11,000 former students who had attended different community colleges and proprietary schools in two states. The data bases used include: a) student records; b) unemployment insurance wage records for the state where the student attended school; c) state unemployment insurance wage records from adjacent states; d) Office of Personnel Management (OPM) data for Federal civilian employees; and e) U.S. Department of Defense manpower data for military personnel. The results obtained, although based on actual records, are designed to illustrate the possible uses of these data. The results are not based on a representative sample of states, institutions, types of institutions, or occupational fields.

The primary source of data used in this study for determining post-program employment and earnings is state unemployment insurance wage records. UI wage records consist of quarterly reports of earnings submitted by each employer who is required to comply with a state's unemployment compensation law. For each covered employee, an employer is required to report the employee's social security number and the total amount of earnings during the quarter. The employer also reports his/her own unique employer identification number, geographic code, and an industry affiliation. UI wage records are collected and maintained by the State Employment Security Agency in each state except Massachusetts and New York, which do not currently require employers to report this information until a claim to receive unemployment benefits is filed.

Findings

The chief findings from the study are:

- The use of existing records resulted in identification of employment and earnings for nearly 80 percent of former students. This substantially exceeds the response rate normally associated with school-administered surveys.

  Figure 1 shows the employment rate of former community college students broken down by different data sources. By using UI wage records alone, 62 percent of former students in State A were found and 72 percent in State B. The use of three additional data sources for State A--adjacent state UI records, OPM data on Federal employment, and DOD manpower records, raised the total number of former students located to 78 percent. The use of a state data base on higher education enrollment, although not part of this study, would further increase the percentage of former students located. These results show that in some states the use of UI wage records alone may be sufficient to obtain reliable results. Where labor markets cross statelines or where there is substantial Federal civilian or military employment, the use of additional data sources may be helpful.

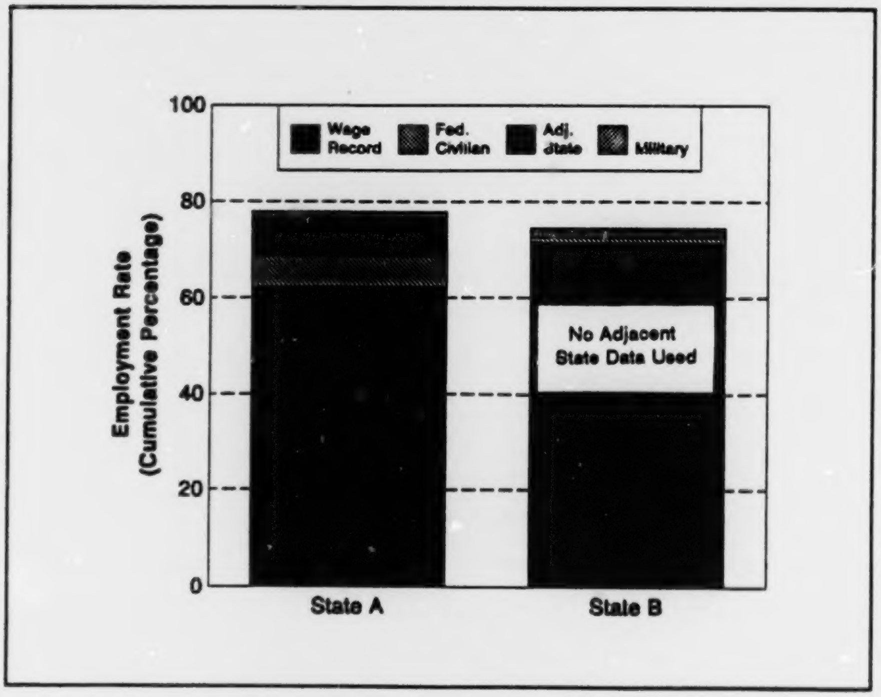

Figure 1. Cumulative Percentage of Employment by Source of Data for Two States

- UI records can be used to access both short and long term employment and earnings growth patterns for former students. The study generated a wide range of findings comparing the employment and earnings of students in different schools, students attending public and private institutions, males and females, program graduates and non-completers, students with different grade point averages, and students majoring in different fields.

  - - Figure 2 illustrates how the employment rate of students attending similar programs at different institutions can be compared. In this example, there are clear and consistent differences in the job placement rate of students attending different schools. The ability to compare job-placement rates for students in different institutions is critical to establishing a system of accountability for educational outcomes.

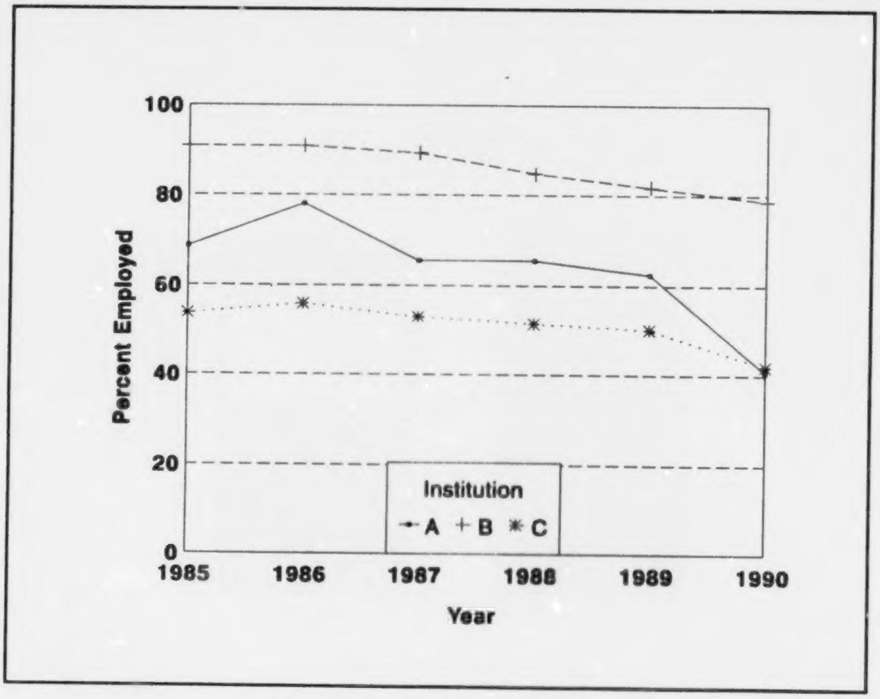

Figure 2. Employment Rate by Selected Institutions for Students Majoring in Data Processing Technologies

- - Another use of these data is to compare the earnings of students who complete a certificate with those at the same institution who do not complete. Figure 3 illustrates that completers consistently earn more than non-completers, and that the gap in earnings between completers and non-completers increases over time. Information presented in this manner can provide a powerful message to students about the importance of completing their program of study.

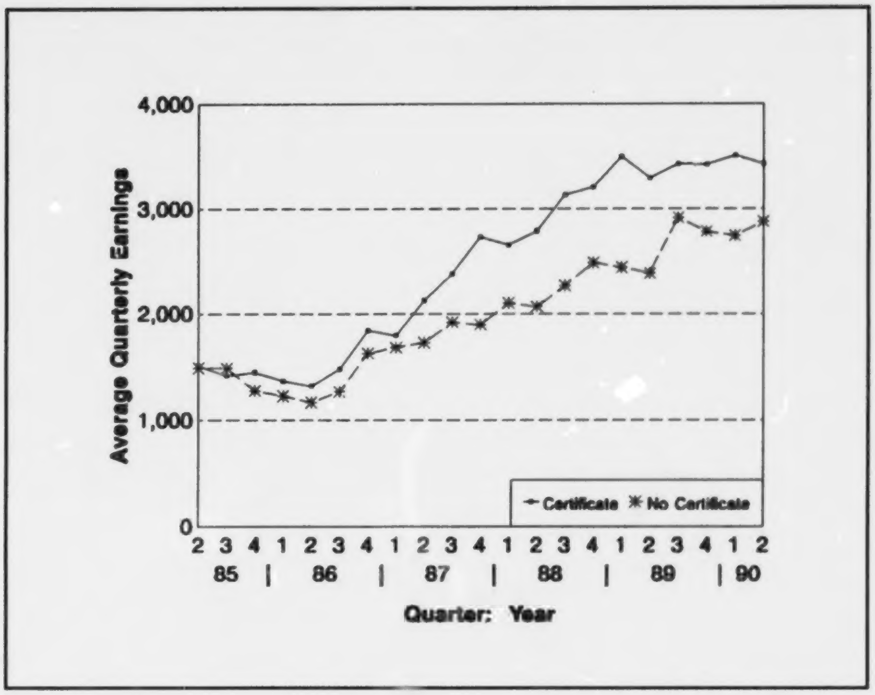

Figure 3. Average Quarterly Earnings for Students of One Institution by Whether or Not They Received a Certificate

- UI wage records cannot be used to determine hourly wage rates or whether a student's job is in a field related to his or her training. To address this limitation, at least one state--Florida--supplements UI wage records by surveying employers to identify the type of occupation in which an individual is employed. This information is then used to determine whether the person's job is "related" to his or her training.

- The cost of matching student records with UI data is approximately three dollars per record, which is substantially less than the cost of collecting survey data from former students. Administrative efficiency requires that responsibility for conducting computer matches be centralized at the state level.

- Student record systems that are incomplete or contain non-comparable records limit the ability to exploit fully possible uses of UI data to compare the labor market performance of students who have attended different institutions or programs. Given new requirements in the Student Right to Know Act that institutions track the progress of students through graduation, significant improvements in student record systems are likely to occur. However, to compare the employment experience of students by race, gender, program of study, grade point average, credits earned, or other characteristics not addressed in the Student Right to Know Act, it would be necessary to ensure that such data are included in the student records that schools maintain.

- To ensure the confidentiality of UI records, rules must be established to protect the privacy of students and employers. This study has censored any data with less than three records in a cell.

Conclusions

This study concludes that the use of UI wage records is a viable strategy to improve the assessment of employment rates and earnings for graduates of vocational programs. Future applications of the methodology tested in this study will occur primarily at the state level. For example, Florida now makes extensive use of UI wage records as part of a state-wide accountability system applicable to vocational education and other job training programs. Other states have begun recently to explore possible use of this resource. In the future, states would rely on this approach to develop performance indicators in vocational education and respond to new oversight requirements mandated in the Higher Education Act.

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I.

INTRODUCTION

Postsecondary vocational education plays vital roles in preparing the country's youth for today's job market and in retraining adult workers to meet the rapidly evolving technological demands of the workplace. But today, perhaps more than ever before, America is focusing on the cost-effectiveness of its educational programs. How can the country compete in an ever more sophisticated global economy? Do the current vocational education programs provide American workers with the skills they need to find and keep jobs and to earn attractive salaries?

To answer these questions, to provide "consumer rights" information required by recent legislation, and to meet increasing demands for public accountability,[1] a reliable, cost-effective, and accurate method of tracking the outcomes of educational programs must be used. This study investigated how existing, readily available wage records could be used to provide timely and accurate information on the employability and earning power of former students.

Purpose of the Study

To advance public understanding of education's contribution to individual employment opportunity and to the Nation's economic viability, this study addresses two key questions:

1. How can state Unemployment Insurance (UI) wage records and related state and Federal administrative data sources be assembled to satisfy

the needs of various constituencies in a timely, cost-effective, and reliable manner?

2. How can this information be presented to satisfy informational needs on education outcomes, while protecting the rights to confidentiality of former students and their employers?

The report presents the findings of a two-state demonstration project that used State Employment Security Agency (SESA) Unemployment Insurance (UI) wage records and other state and Federal data bases to learn about the employment and earnings outcomes of former students of participating institutions. One state, located near the Nation's capital, features a high presence of Federal personnel, both civilian and military, and individuals who are employed in adjacent states. The other, a midwestern state, appears to have a population less mobile in working across state lines.

The findings reflect the fact that this was a demonstration project. It was designed to illustrate how state wage data and other existing administrative records can be used to assess the employment experiences of students participating in postsecondary vocational training programs. The results presented are based on the data available from the participating institutions and do not necessarily represent actual conditions across all institutions in the states studied or nationwide. The analyses presented may pertain to former students of one institution, one curriculum program, one state, or both states. The results of the demonstration project are **illustrative**; they are samples of the types of analyses that can be conducted.

Within the two demonstration states, the project collected data about former students of community colleges and proprietary schools that volunteered to participate. The report does not identify these institutions as anonymity was a promise given to all school administrators for participation. In the eastern state, there were five cooperating community colleges with 1,631 students and eight participating proprietary schools with 3,900 students. In the midwestern state, there were nine cooperating community colleges with 4,778 students and six participating proprietary schools with 1,195 students. Altogether, 28 institutions were involved in the demonstration project and 11,504 student records were available for analysis.

During the late 1980's, there was growing concern about accountability in postsecondary vocational education. Prospective students and their parents wanted evidence of how former students had fared in the workplace. Executive managers within the public and private postsecondary systems wanted practical ways to keep in touch with the market for their "product" (i.e., students who have acquired new skill competencies at their institutions), in part, to make decisions about the future funding of programs.

Further impetus to this trend comes from several sources of Federal policy. The Carl D. Perkins Vocational and Applied Technology Act of 1990 requires each state receiving funds under the Act to implement a statewide system of performance measures for both secondary and postsecondary vocational education. These systems of standards and measures are to be activated by October 1992. Evidence of former students' subsequent employment is a permissible measure of performance that might accompany required measures of learning and competency gains. The reauthorization of the Higher Education Act of 1965 addresses the improvement of program integrity through better state oversight. Approaches include giving more attention to job placement rates for students in schools providing vocational training. In addition, the Federal and state "report card" and industry-specific skill standard features of the **America 2000** initiative will focus more attention on former students' subsequent employment status.

This report provides useful tools and information that can help policymakers, educators, and practitioners gather the information they need to meet these various requirements.

Policymakers can use the research findings to determine the feasibility of linking school records with existing wage records to:

- measure the performance of institutions providing job and vocational training;
- determine employment and earnings outcomes of former vocational students;
- assess changes in the performance of vocational education students over time; and
- assess the performance of various programs and categories of students.

Practitioners can use the procedures in this report to:

- track the placement outcomes of students;
- evaluate the effectiveness of the curriculum; and
- make adjustments in the curriculum or placement and counseling activities in light of employment experiences.

The study documents a practical way to build upon state-level efforts[2] that are already under way across the country. Unique features of the demonstration project that complement these efforts, but go beyond them in scope include:

- the inclusion of proprietary institutions (i.e., private career schools);
- the introduction of "external factors" to put employment and earnings outcomes into the context of local circumstances beyond the control of school administrators;

- development of multiple presentation formats to meet the needs of different users of the information, while protecting the anonymity of former students and employers; and
- access to more than four years of wage records for one of the participating states, which allowed investigation into long-term outcomes that others have been unable to address.

Caveats

The report specifically focuses on the use of state UI wage records as a method to determine employment and earnings outcomes for former students. The data that are introduced in the report include **only** former students in selected public community colleges and private career schools in the two demonstration states. However, the approach can be followed with little modification to assess employment and earnings outcomes for former students in high schools, four-year colleges, and even work-site learning activities.

State UI wage records do not contain information on four potentially important classifications of wage earners: 1) Federal government employees; 2) self-employed individuals; 3) agents who are paid on a commission basis only (i.e., they receive no salary); and 4) people who work outside the state in question. However, the utilization of additional data bases can be used to fill in some of these gaps. In this demonstration project the following additional data sources were used:

- U.S. Department of Defense file data for personnel entering the military between FY85 and March 1990;
- U.S. Office of Personnel Management file data for Federal civilian employees employed during 1990; and
- adjacent state UI wage records data for employees covered by that state's statutes (in one demonstration state only).

The term "employment rate" is used throughout this report to refer to the rate of employment of former students for whom wage records were found. The authors acknowledge that this "employment rate" does not include the categories of workers described above.

Why Use Existing State UI Wage Records?

The prevailing method for determining postprogram employment and earnings measures is by surveying the graduates. Teachers and school administrators are often asked to determine employment affiliation and starting wage rate at the time of, or shortly after, each student's departure. Critics of this approach argue that teachers and school administrators have a powerful incentive to report only favorable outcomes. Student alumni surveys are sometimes used, but these are often subject to low response rates and well-known inaccuracies in self-reported earnings, such as higher response rates by employed alumni.

An alternative approach, Unemployment Insurance (UI) wage records, is demonstrated in this project. UI wage records consist of quarterly wage reports submitted by each employer who is required to comply with a state's unemployment compensation law. For each covered employee, an employer is required to report the employee's social security number and the total amount of earnings during the quarter. The employer also reports his/her own unique employer identification number, geographic location, and industry affiliation. UI wage records are collected and maintained by the State Employment Security Agency in each state except Massachusetts and New York, which do not require employers to report this information until a claim to receive unemployment benefits is filed.

The study revealed four significant advantages to linking school information on former students with state UI wage records:

- **Completeness of records.** The state UI wage records contain employment and earnings data on about 97 percent of all employees (except in Massachusetts and New York at the present time.) This contrasts with the low response rates and consequent nonresponse biases often obtained through alumni surveys.
- **Ease of linkage.** The social security number of students is the only required identifying element for record linkage.
- **Cost effectiveness.** Access to these data sources for postprogram data collection provides a cost-effective alternative to time consuming, low response methods such as student surveys. State officials of a state using UI wage data supplemented by other sources reported that the cost for obtaining outcome information had been reduced from $17.00 to $3.00 per student.
- **Availability of data for longitudinal analyses.** Data are available by quarter and for a period of at least four years, thus, administrators may conduct short-term and longitudinal analyses.
- **Timeliness.** A quarter's wage record data are generally available within four to six months.

What Did the Study Reveal About the Workplace Experiences of Former Students?

The report illustrates in detail how the data can be used to examine trends regarding former students in the workplace. Particular data elements have been chosen for display based on their relevance in satisfying frequently encountered consumer requests for information. Their purpose is to illustrate what can be done using state UI wage record files and other available data bases.

It should be noted that for the purposes of the demonstration project, all follow-up on students was done from the time that they first enrolled in a program. In actual practice, the time frame for at least some of the analyses would probably be from the point of program completion.

An example of the types of analyses presented in the report appears in Figure 1. It compares employment rates over a five-year period for former students at three community colleges in one of the demonstration project states. Figure 1 shows significant outcome differences among institutions within a state. The employment rate of former students of Institution A is considerably higher than the employment rate of former students of Institutions B and C throughout the time period analyzed, 1985-1990.

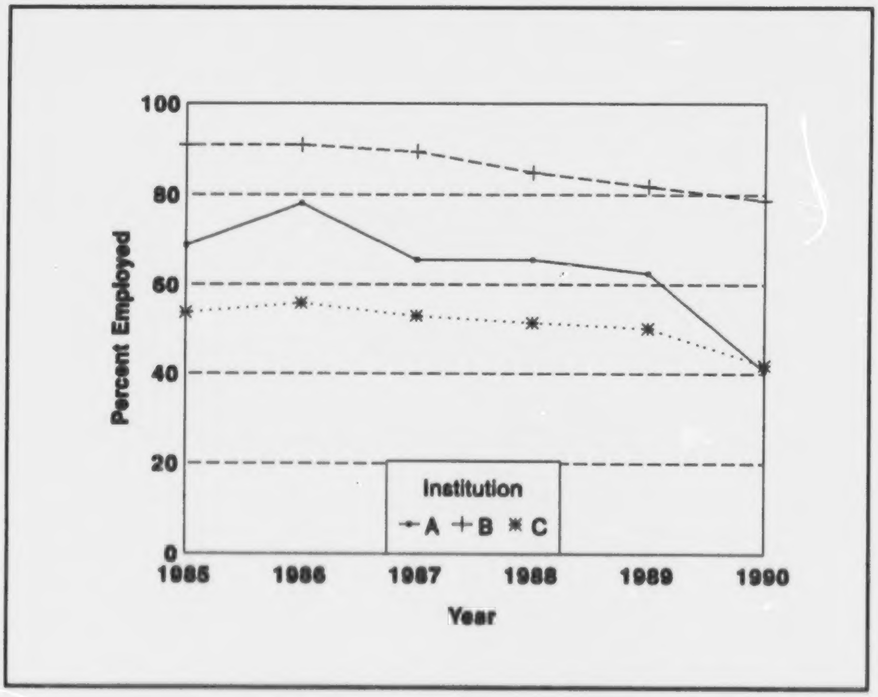

Figure 4. Employment Rate by Selected Institutions for Students Majoring in Data Processing Technologies

Figure 2 shows the employment rate for the former students in a specific occupational curriculum of community colleges. By using state UI wage records alone, 62 percent of the former students were found in State A and 72 percent in State B. The additional data sources bring the state totals to 78 percent for State A and 75 percent for State B. Thus, three out of every four former students in each of the two states' community college programs were found by querying four available data sources. Other former students were not included in the data bases because they were self-employed, had returned to school, worked in other parts of the country, or had never joined the workforce.

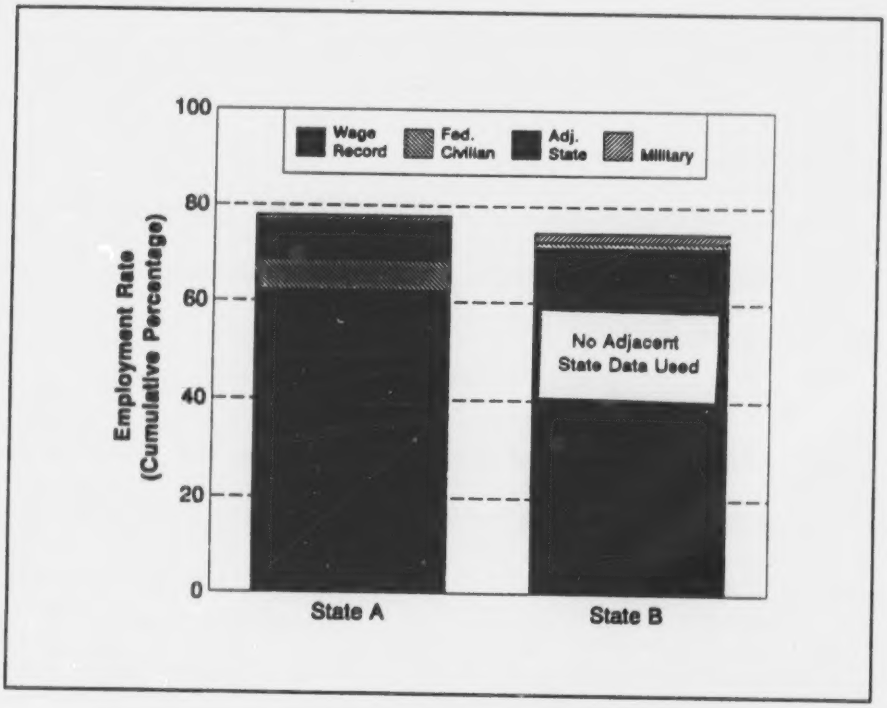

Figure 2. Cumulative Percentage of Employment by Source of Data for Two States

Two other sources of administrative data, Social Security Administration (SSA) information and Internal Revenue Service (IRS) information, have weaknesses that limit their use in investigations of education postprogram outcomes. A serious weakness of both sources is the substantial delay in obtaining the data. Typically, it takes three to four years before the files are available in a form usable by analysts. In addition, unit-record data cannot be released from either data set. Additional limitations of the SSA files are that earnings above the taxable maximum are not reported and the data are available on an annual basis only compared to the quarterly data available in state UI wage records. An additional weakness of IRS data is that earnings from a specific job or employer cannot be isolated.

Expanding the Picture

Existing wage data allows a "snapshot" of the former students' employment and earnings levels at a particular time, or a tracking of the students' employment and earnings over a period of time.

The Snapshot. Through the demonstration project, the school records of former students linked with UI wage records provided data to determine:

- employment status of former students from both public and private postsecondary schools;
- employment status of former students at program exit by type of institution, placement, and degree status;
- earnings of former students at job entry;

- employment and earning status by type of program completed and for noncompleters; and
- employment and earnings status at program exit by gender, race, and age.

The Long-Range View. With historical data found in state UI wage records, analyses of long-range outcomes can be ascertained for former vocational education students. These include:

- earnings gains over a five-year period;
- employment rates over a five-year period;
- long-term employment rates by institution, program, and state;
- long-term outcomes by gender, race, or age group; and
- the affect of local economic conditions on long-term employment and earnings.

The Background. Local labor market conditions can greatly influence the types of jobs secured and job earnings. Changes brought on by a recession, plant closings, reductions-in-force, or new requirements for specific occupations may not affect all areas of a state equally. These changes may also affect employment and earnings differently.

Because it may be misleading to release program- and school-specific information without explaining differences in student populations, school programs, and local economic conditions, the demonstration project incorporated data on those external factors that are beyond the control of vocational educators. These factors included employment/unemployment rates and growth level as measured by the number of building permits issued.

Employment Across Institutions. Most consumers of information focus on particular schools. This is the case for prospective students and their parents and counselors, who may want to know the employment track record for former students from specific schools in recent years. Figure 3 compares employment rates over a five-year period for former students at three community colleges in one of the demonstration project states.

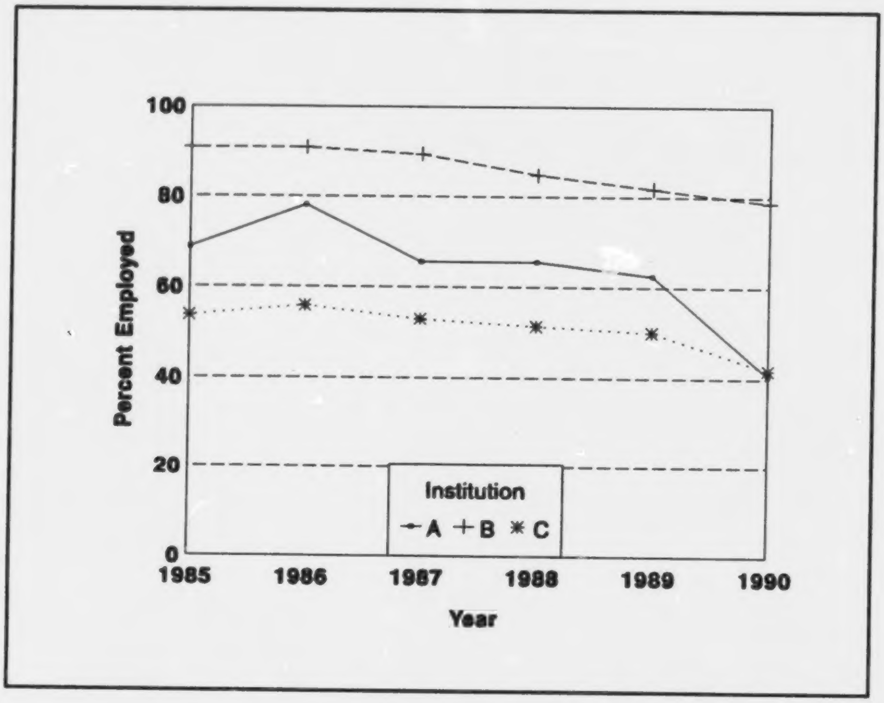

Figure 3. Employment Rate by Selected Institutions for Data Processing Technologies

Figure 3 reveals significant outcome differences among institutions within a state. For example, the employment rate of former students of Institution A is considerably higher than the employment rate of former students of Institutions B and C throughout the time period analyzed, 1985-1990. However, care must be taken not to draw conclusions too quickly from such evidence. The differences in employment rates might be explained by influences such as local economic conditions. Data such as those shown in Figure 3 should be used as a **starting point** for investigating accountability, not as a conclusion of such investigations.

Relationship of Certificate Completion to Employment and Earnings. Figure 4 traces five-year paths of documented employment for two groups of former students from one postsecondary institution--those who received a certificate and those who were not awarded a certificate. Figure 4 shows that persisting to the award of a certificate is strongly associated with employment prospects. An important strength of the archival approach, which combines school-based information about former students with subsequent employment and earnings information about these same people is that in-depth inquiries can be initiated based on preliminary results such as those shown in Figure 4.

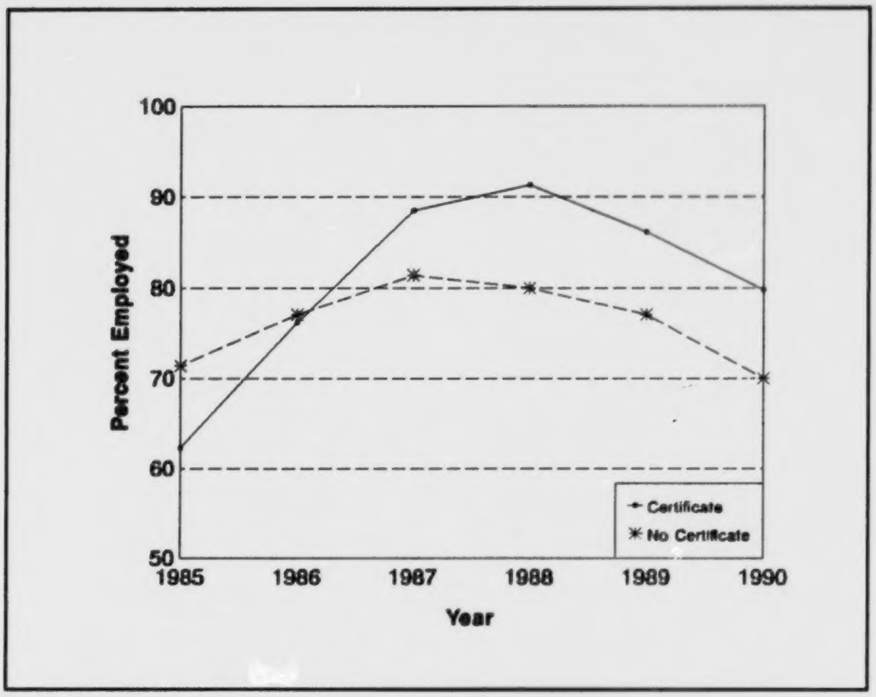

Figure 4. Employment Rate for Students of One Institution by Whether or Not They Received a Certificate

Figure 5 traces quarterly earnings levels for these same students. In 1986, the average quarterly earnings of those students who had been awarded a certificate were slightly higher than their counterparts who had not received a certificate. The difference in earnings of these two groups widened over time.

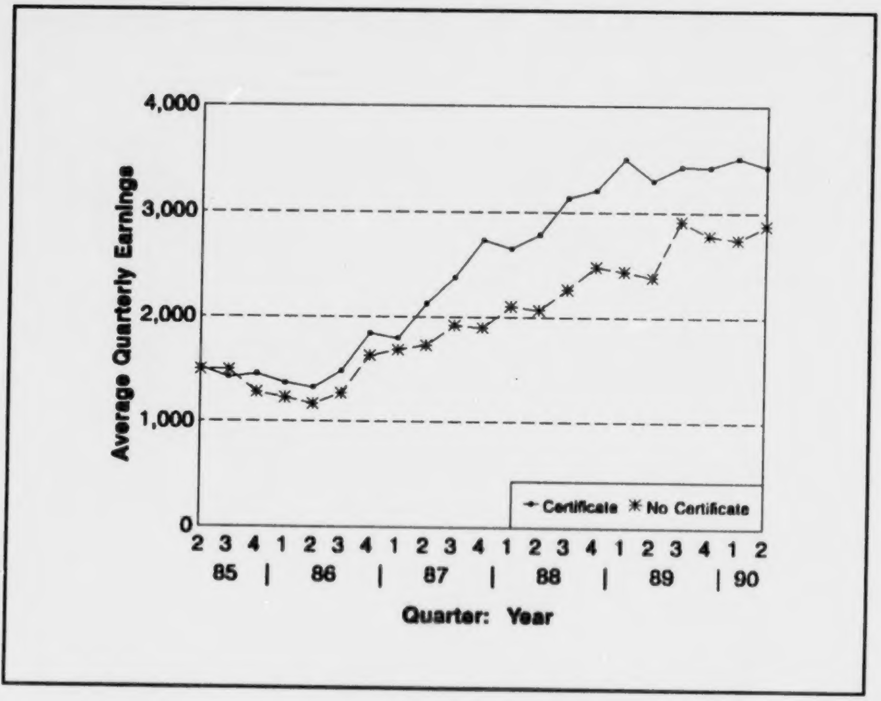

Figure 5. **Average Quarterly Earnings for Students of One Institution by Whether or Not They Received a Certificate**

Grades and Future Earnings. Analysis of earnings can be taken a step further to answer the following question: "Does the academic performance of former vocational education students affect their earnings in the workplace?"

Figure 6 shows earnings over a five-year period for former students whose cumulative grade point averages (GPAs) are known at the time of program exit. This example includes an entire state's first-time community college enrollees in a given year although only those who had some earnings are considered in the average earnings figures.

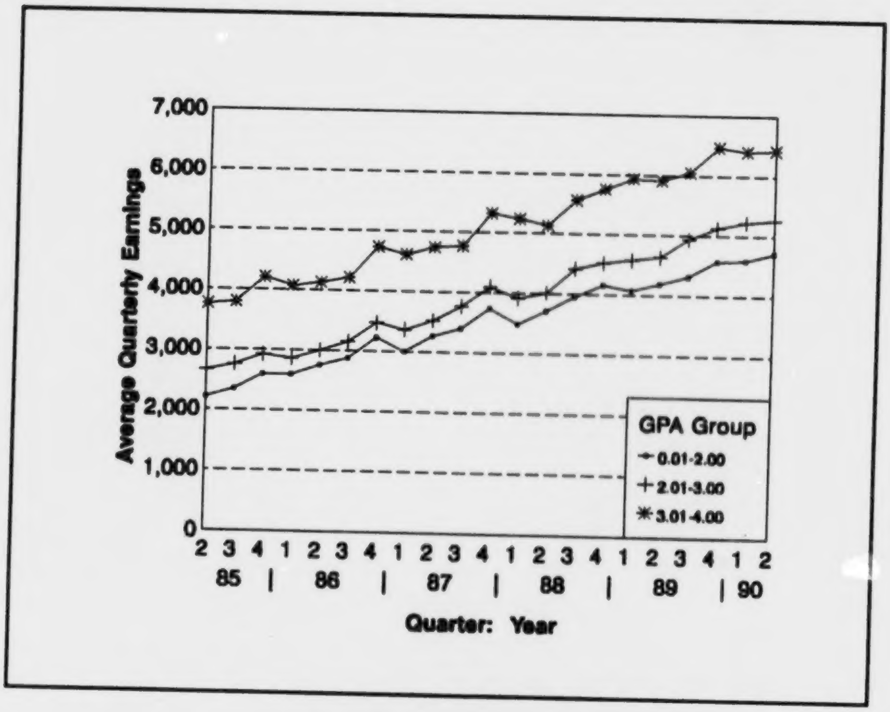

Figure 6. Average Quarterly Earnings by Grade Point Average at Program Exit

Substantial differences in average earnings between those with the lowest cumulative grade point averages and those with the highest cumulative grade point average were found. Thus, a substantial premium is being paid for college performance and this pattern is consistent over time. This type of information might be useful to a prospective student about the potential benefits of time and effort in academic pursuits.

Student Characteristics and Outcomes. Vocational educators often emphasize that differences in student demographics across schools and among programs within schools should be considered in performance measurements. For example: "Do the employment and earnings experiences of former vocational education students differ for men and women?"

Figures 7 and 8 focus on gender-based differences in employment and earnings of former students from 1985 through 1990. Figure 7 shows only small differences in the employment rates of former male and female students.

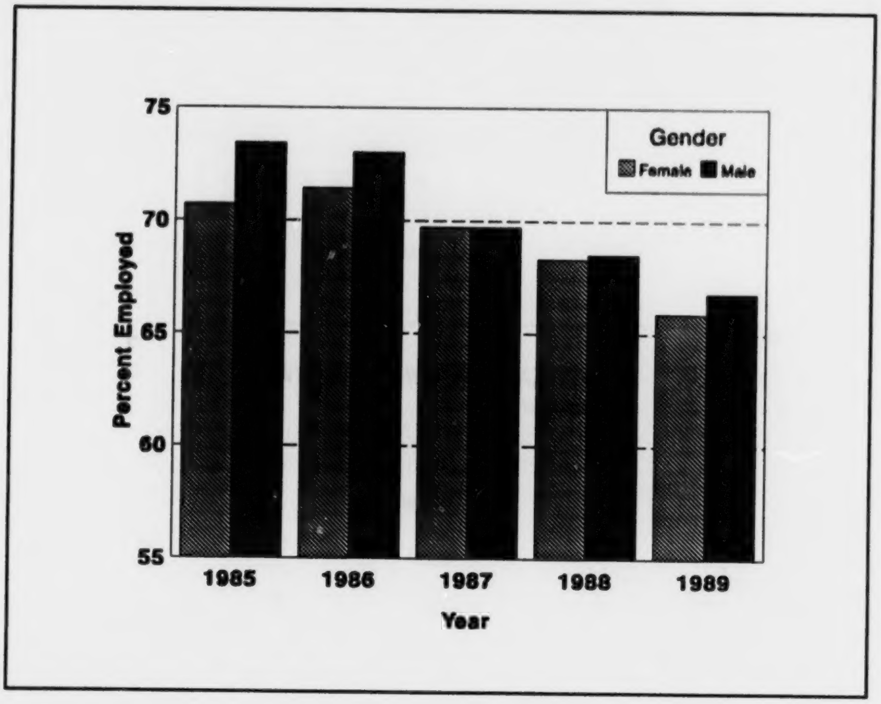

Figure 7. Employment Rate by Gender

Earnings differences between male and female students were much more dramatic. The earnings of women started at a much lower level and remained so through the five-year period shown in Figure 8. Thus, programs with higher numbers of female students may demonstrate lower earnings outcomes than programs with large percentages of male students.

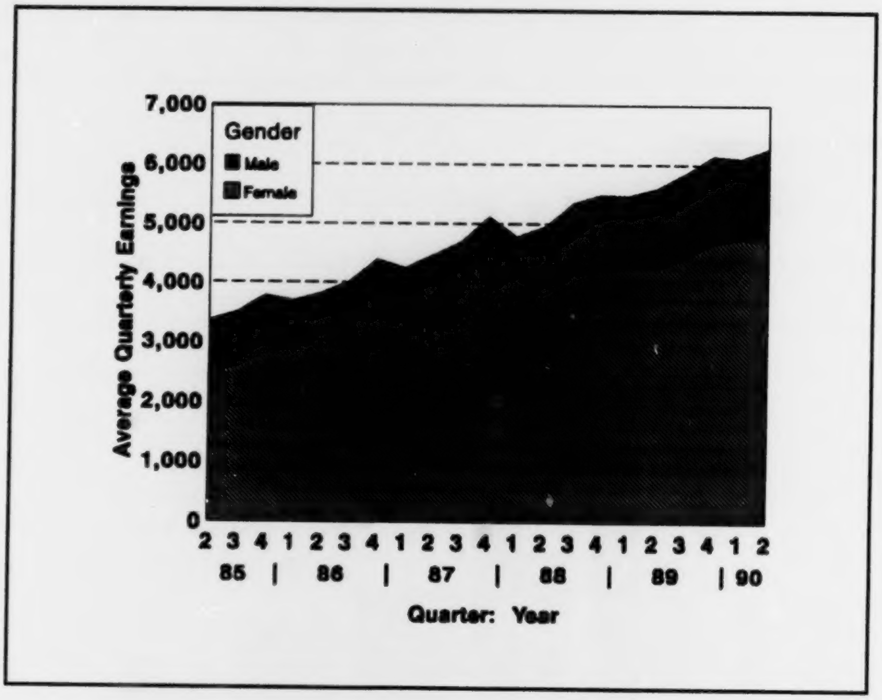

Figure 8. Average Quarterly Earnings by Gender

One factor that may be influencing these differences in earning power is full- or part-time employment status. State UI wage data records reflect both full- and part-time employment earnings without distinction. Generally, in labor force data, women are found to work part time more often than men; however, this could not be substantiated with the demonstration project data.

As the Economy Goes . . . The economic downturn in 1989 clearly affected the employment rates of former students. Since the demonstration project did not collect data past the first two quarters in 1990, this report does not explore the full effect of the recession on former students.

However, Figures 9 and 10 provide illustrations of the economic effect on 1984 community college business and commercial technology enrollees. In an attempt to maximize the difference in local economic conditions, the home counties of the community colleges in one state were arrayed along a continuum of economic strength--in this case measured by changes in building permit issuance--with the highest and lowest quartiles compared.

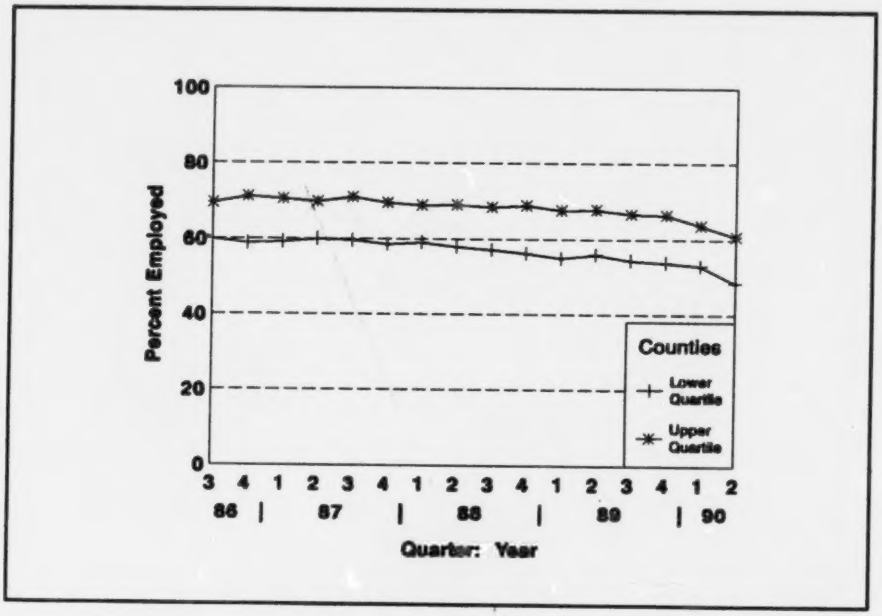

Figure 9. Employment Rates of 1984 Community College Business and Commercial Technology Enrollees by the Growth Level of the County in Which the College is Located

Figure 9 shows that low-growth counties consistently have less employment than high-growth counties. It also shows a downward pattern in the employment rate of former students beginning in the final quarters of 1989.

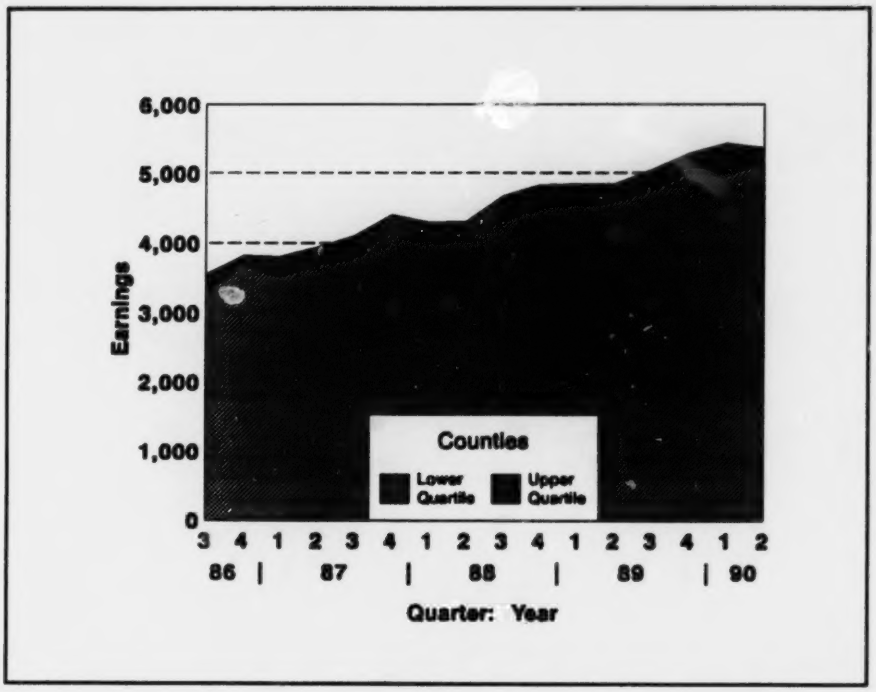

Figure 10. Earnings of 1984 Community College Business and Commercial Technology Enrollees by Growth Level of County in Which the College is Located

However, Figure 10 indicates steady increases in the average earnings levels for those former students who were employed. **The data collected by the demonstration project suggest that the downturn of the economy may have affected the employment rates, but not the earnings levels, of former students in counties of both high and low economic growth.**

The illustrative presentations in the report must be treated with caution, as they reflect the experiences of former students of self-selected vocational institutions in two states and are, therefore, not representative of the population of former students as a whole.

In summary, the strength of using existing wage data sources lies in the long-term perspective gained for data analysis and the ability to relate information about students, schools, programs, and economic factors to students' employment and earnings.

The remainder of this chapter provides the following information to help the reader:

- Structure of the Report
- How to Use the Report

Structure of the Report

The primary purpose of the report is to present the findings of a demonstration project that tested the concepts and applications of linking student records using social security numbers with state UI wage and other data sources. The report also:

- shows how using existing wage data bases will meet the needs of policymakers, practitioners, institutional managers, and prospective students;
- provides the necessary step-by-step processes for decisionmaking and for developing procedures to use existing data sources; and
- discusses the limitations of the recommended data sources.

The report is divided into six additional chapters:

II	**The Context**
III	**Consumers, Vocational Education, and Policymakers**
IV	**Testing the Concepts**
V	**Findings of A Demonstration Project**
VI	**Which is Better? Point-in-Time Outcomes versus the Longitudinal Perspective**
VII	**Five Steps for State Implementation**

II **Chapter Two: The Context** provides the background of the public's renewed interest in employment and earnings outcomes in an education context. It also gives the reader the historical perspective for record linkage.

III **Chapter Three** identifies the needs of various audiences such as policymakers, prospective students, and administrators of educational institutions for employment and earnings information.

IV **Chapter Four** describes the concepts tested by the demonstration project with a thumbnail sketch of the data sources and elements used.

V **Chapter Five** presents the findings from the two-state demonstration project, organized around policy-oriented questions, to illustrate how wage data can be used and presented.[3] The model used builds on pioneering efforts in several states but adds two major dimensions--student information from private proprietary schools and information on external factors such as local economic conditions beyond the control of educators and policymakers.[4]

VI **Chapter Six** provides an answer to the question: "Which is Better--Point-in-Time versus Longitudinal Perspective?"

VII **Chapter Seven** provides five steps for state implementation of a system to link school-based information with state UI and other state and Federal wage data records. These steps are:

- **Plan and Determine Data Priorities**
  Step One explores issues for consideration in planning and determining data priorities within a state's unique governance

structure, statutory authority, regulatory framework, and institutional mix.

- **Identify State and Federal Administrative Data Sources**
  Step Two identifies and provides an overview of the various state and Federal wage data sources investigated.

- **Make Data Collection Decisions**
  Step Three addresses data collection issues that must be considered in the early stages of record linkage.

- **Develop Data Processing Procedures**
  Step Four focuses on data processing procedures.

- **Conduct Data Analysis**
  Step Five discusses procedures for translating data analysis to consumer information.

How to Use the Report

The report contains information of value to policymakers, state and local administrators, practitioners, and consumers of postsecondary vocational education. Readers should begin by taking a tour of the report. The chapters of the report are in a logical progression from legislation to research to practice in the real world.

Chapters Two and Three give the reader an understanding of the policy issues that set the stage for the demonstration project. **Chapter Four** describes the processes and data sources used by the demonstration effort. **Chapter Five** presents the project's findings and is the heart of the report. It focuses on the issues of concern to policymakers; however, practitioners will learn from reviewing the presentation of the data and the results of the analyses. **Chapter Six** provides a profile of the strength of the longitudinal perspective. **Chapter Seven** is written with the practitioner in mind, but the policymaker will benefit from reviewing each step discussed to determine the feasibility for state UI wage record linkage in respect to state statutes, regulations, and procedures already in place.

Extensive endnotes provide references for deeper investigation into selected topics. An appendix discusses the differences between outcome measures and performance standards, and alerts readers to challenges that are likely to arise in the use of these measures.

II.

THE CONTEXT

Chapter Two discusses the context in which the demonstration project was designed and implemented. It begins with a historical perspective and continues with a look at the changing legislative environment and factors influencing the use of state Unemployment Insurance (UI) wage data.

Historical Perspective

Traditionally, student performance in the labor market has been gauged by the collection and reporting of outcome measures such as initial job placement information. Few studies focused on longer-range outcomes such as job retention and earnings growth.

During the 1980's, several studies noted that the skills of the American workforce were falling behind those of workers of other industrialized nations.[5] In a global economy, sustained growth depends on a highly skilled workforce. These studies resulted in a greater emphasis on accountability in education for the performance of former students in the labor market. Now, more than ever before, educators and policymakers need to be able to accurately assess and report the performance of former students in the labor market over time. Information is needed about both the initial job placement and the long-term employment of former students.

A state's UI wage records are a cost-effective source of information about employment and earnings information for many former students. These administrative data are generally maintained by the unemployment compensation division within the State's Employment Security Agency (SESA). These data have not been extensively used in the past due to concerns about privacy and workload.

Congress passed the Deficit Reduction Act in 1984 which plays a key role in defining today's issues about using existing state UI wage data and the context within which SESA administrators have been struggling to find an appropriate balance between their own agency's interests, the need to protect the confidentiality of former students and their employers, and broader public concerns about education.

Deficit Reduction Act of 1984

This Act stipulated that:

> . . . employers in [each] State are required, effective September 30, 1988, to make quarterly wage reports to a State agency (which may be the agency administering the State's unemployment compensation law)[6]

This Act was intended to facilitate the verification of income and eligibility for selected Federal benefit programs.[7] By 1984, three-fourths of the states were already collecting quarterly wage reports in support of their state-authorized and administered unemployment compensation programs. Today, as a direct result of this Congressional mandate, all states (except Massachusetts and New York which comply with the requirement through a state agency other than a SESA) collect UI data.[8]

The Federal Income and Eligibility Verification System (IEVS) mandate requires each state to provide stipulated data elements in support of Federal programs including Aid to Families with Dependent Children, Medicaid, Food Stamps, Child Support Enforcement, and Health and Human Services. Congress's mandate for third-party access to these records for income verification and eligibility determination purposes set the stage for subsequent deliberations within SESAs about how to respond to third-party requests for further access to the administrative records. In every state, there are some people who object to the use of these data to gather evidence about the outcomes of educational programs.

America 2000

"America 2000" is not a Federal program but a national strategy designed to accomplish by the year 2000 the six national education goals developed and presented by the President and the state governors as a result of the 1989 Educational Summit in Charlottesville, Virginia. Two parts of this strategy announced on April 18, 1991, "Better and More Accountable Schools" and "Creating a Nation of Students," call for:

- national and state report cards on how well education is doing, and
- the development and measurement of job-related (and industry-specific) skills standards built around core proficiencies, resulting in the award of "skill certificates."

The "America 2000" strategy, along with legislation in 1990 mandating standards and measures of performance for postsecondary vocational education programs, focuses on the need to measure educational outcomes.

Legislation in the 1990's

America 2000 provides a strategy for the future, but the Carl D. Perkins Vocational and Applied Technology Act of 1990 is the event that has triggered the most widespread interest in the use of state UI wage records and need for a report of this type. Specifically, this law states that:

> . . . each state board receiving funds under this Act shall develop and implement a statewide system of core standards and measures of performance for secondary and postsecondary vocational education programs.[9]

To comply with this law, state boards must implement at least one of four permissible measures of performance in addition to measures of learning and competency gains. One permissible measure is "placement into additional training or education, military service, or employment."[10]

The Perkins Act further encourages vocational educators to understand what is happening in Job Training Partnership Act programs by requiring that:

> . . . in developing the standards and measures included in a system developed under subsection (a), the State board shall take into consideration--(1) standards and measures developed under job opportunities and basic skills training programs established and operated under a plan approved by the Secretary of Health and Human Services that meets the requirements of section 402(a)(19) of the Social Security Act; and (2) standards prescribed by the Secretary of Labor under section 106 of the Job Training Partnership Act.[11]

Accurate and cost-effective sources for the collection of outcomes data can also facilitate analyses of results across multiple program areas. For example, there is increasing interest among states in monitoring the transitions of program participants among different education, employment, and assistance programs (e.g., welfare, Food Stamps, unemployment insurance) over time.

There is also a spreading awareness that advice to "get a skill and get a good job" no longer suffices to protect a worker from exposure to a high risk of the vagaries of the job market. The traditional once-in-a-lifetime movement from school to work without worry of layoff has been transformed into a complex mix of school-work-retraining-unemployment combinations. In addition to state accountability, an important reason for releasing this report at this time is to promote the use of available administrative data sources to investigate these dynamics of the labor market.

Further impetus for the use of state UI wage records comes from the reauthorization of the Higher Education Act of 1965. This statute addresses the improvement of program integrity through better state oversight. Approaches include giving more attention to job placement rates for students in schools providing vocational training.

Participants' Views of Accountability Issues

"I don't like the idea of being compared to somebody else."[12] This recent statement by a high school principal was made following the public release of school-by-school performance levels to 13 performance standards included in one state's two-year-old School Performance Program. A county superintendent of schools adds, "the state department [of education] has overlooked some very important indicators of the quality of services provided kids, things that you can't quantify for a report card."[13] The State School Superintendent counters that "for years, the public has been asking, 'are we getting our money's worth?' I believe we must have this quality control dimension if we're to convince the public that the system is worthy of its resources."[14] The Chairman of the Board of a major corporation in another state echoes this sentiment:

> The public schools lack two critical elements that force business to improve and deliver value--the pressure of competition and the demands of consumers in the marketplace. Any monopoly without demanding customers will never reform itself.[15]

These statements offer a participant's eye view of the accountability process from four perspectives--a school principal, a county superintendent, a state school superintendent, and a business executive. Each makes valid points that need to be considered in any system designed to use administrative data to determine the employment and earnings outcomes of former students. In the report are cautions given on the interpretation of data and technical considerations, some of which are given to satisfy legitimate criticisms or to raise new issues that must be taken into account.[16]

Summary

To help address the information needs for providing "consumer rights" information and for program accountability, this report explores the use of existing state and Federal administrative data, especially state UI wage records, to learn about the workplace experiences of former students and the external factors that influence these experiences. Each of the practical considerations that must be addressed is covered in **Chapter Seven.**

III.

CONSUMERS, VOCATIONAL EDUCATION ADMINISTRATORS, AND POLICYMAKERS: QUESTIONS THAT CAN BE ANSWERED WITH WAGE RECORD DATA

Employment and earnings information holds value for providing "consumer rights" information, for determining performance outcomes, and for developing future policies. (See Figure 11). This chapter discusses different types of informational needs of various consumers and individuals who might oppose using administrative data for follow up on former students. It provides cautions about the restrictions on use of state UI and other administrative wage records. The interests and information needs for three key groups--consumers such as prospective students and their parents, administrators of education institutions, and policymakers--are explored in detail.

Consumers

Prospective students and their parents want to know what kinds of results they can expect from investments of time, money, and effort into education. A student may have questions about a particular course of study, employment opportunities in a specific occupational field, and future earnings potential. State UI and other administrative sources can answer many of the questions prospective students might ask, particularly when the data are linked with the records of the educational institutions.

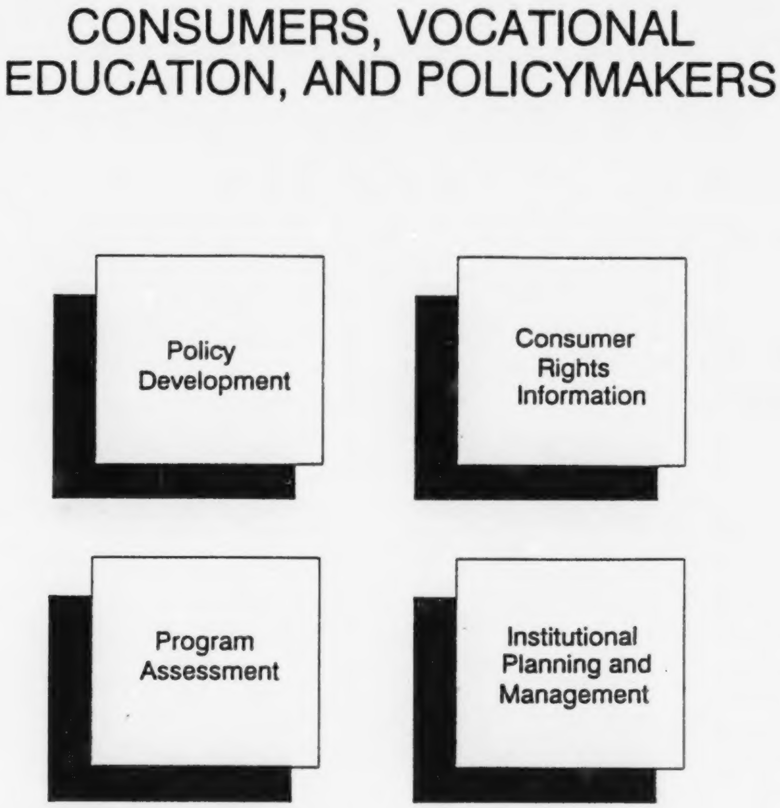
CONSUMERS, VOCATIONAL EDUCATION, AND POLICYMAKERS
Policy Development
Consumer Rights Information
Program Assessment
Institutional Planning and Management

Figure 11. **Uses of Existing State and Federal Data Sources**

Table 1 shows the types of questions that can and cannot be answered from UI and other wage records. For many of the questions, institutional records must be linked with wage records to obtain an answer.

TABLE 1
Questions That Consumers Might Ask

QUESTION	CAN BE ANSWERED FROM WAGE RECORD DATA
How many students find year-round employment after completing their program of study?	YES
Are the former students employed in the fields in which they were trained?	NO
How do the earnings of program graduates compare to the earnings of those who did not complete their programs?	YES
How many students completed their programs of study?	NO (Only in institutional records)
How do the earnings of recent graduates from Institution A compare to those of recent graduates from Institution B?	YES
Have former students' earnings increased over time?	YES
Are grades associated with differences in employment rates and earnings?	YES

Vocational Education Administrators

Administrators of vocational education institutions can use employment and earnings information for institutional planning and management decisionmaking. State UI and other data sources can help to answer the following questions that may be asked by administrators, program managers, and instructors as they make decisions about education programs.

- What are employment and earnings data at particular points in a student's participation in a program--at enrollment, while enrolled, and at departure?
- Do the employment and earnings outcomes over time of program completers indicate a need for changes in specific programs?
- How do student demographics affect employment and earning rates among programs? For the school?
- Does employment and earnings information for those students who do not complete their programs reflect a need for improvements in program content or student services?
- Do employment and earnings data suggest the need to assess related educational services such as career counseling or job placement assistance?
- For those students employed at enrollment, what are the initial and long-term earnings gains after program completion?
- Should changes in the curricula of various programs be made based on an assessment of the performance of program completers?
- How do student intentions at enrollment affect student performance in the workplace?
- What are the weakest programs based on employment and earnings data? Are there special circumstances such as economic factors that may explain some of these weaknesses?

Administrators may be more inclined to enthusiastically participate in the process of record linkage when the benefits of employment and earnings data relate to their responsibilities for decisions about initiating new programs or modifying current programs. Longitudinal data provides the information they need to analyze trends among occupational programs and to investigate the employment and earnings experiences of special groups of students (e.g., women, ethnic minorities, and older students) who may benefit from related support services such as career counseling, tutoring, or job search assistance.

Record linkage with UI and other wage data cannot tell school administrators how satisfied employers are with the job skills of former students, or how satisfied former students are with the program content and teaching techniques used by the school's instructors.

Policymakers

The state is the focal point for the data collection and dissemination approach presented in this report. Thus, policymakers who must finance training and implement appropriate reporting systems may be interested in the types of questions state UI wage records will help them to answer. For example:

- What is the employment status of former postsecondary vocational education students in the state? Among institutions? Among programs?
- What are the long-range outcomes (e.g., job retention and earnings growth) of former postsecondary vocational education students?
- What are the average earnings of former students at job entry by selected program within an institution, or among institutions across the state?
- What are the employment and earnings experiences of completers and non-completers of the same program of study?
- Does the grade point average of former students affect long-term earnings gains?

- What are the employment outcomes for completers of different occupational programs by selected institution and among institutions within the state?
- Do employment and earnings outcomes differ for day and evening students?
- What income growth do those students employed at enrollment experience over time?

The strength of using wage record linkage lies in its ability to provide information about job retention and earning gains of former students over a much longer period of time than placement information at program exit, without requiring local institutions to perform time-consuming, expensive surveys of former students, often with disappointingly low response rates. Existing wage data can vastly improve the quality and quantity of information on employment and earnings outcomes available to policymakers for decisionmaking. **Chapter Five** provides answers to many of the questions listed above for former students in the two states participating in the demonstration project.

Summary

In conclusion, although substantial progress has been made in establishing a set of guidelines that will promote wider availability of these wage records, steps remain for states to take before the full potential of the approach is realized.[17] The states can be aligned along a continuum of progress to date in establishing consolidated multi-agency approaches to record linkage.[18]

A primary goal in this report is to provide each state with accurate information about what has already been done and what is currently possible as well as how to protect the confidentiality of former students and their employers. **Chapter Seven** of this report delineates five steps that describe the process and the procedures for taking an interagency approach to record linkage and for protecting student confidentiality.

IV.

TESTING THE CONCEPTS

Chapter Four introduces the concepts tested by the demonstration project as well as the data elements and sources used. Two of the key concepts tested by the demonstration project were first raised in the **Introduction**. These concepts are:

1. State Unemployment Insurance (UI) wage records, and related state and Federal administrative data sources, can be assembled to satisfy the needs of various constituencies in a timely, cost-effective, and reliable manner.
2. This information on education outcomes can be presented in a useful format, while protecting the rights to **confidentiality** of former students and their employers.

To test these concepts, the project tapped existing state and Federal administrative data sources related to two states. One state, located near the national capital, is characterized by a particularly mobile workforce that frequently crosses state lines, and by a high level of Federal personnel (both civilian and military). The other, a midwestern state, has a less mobile workforce, with little crossing of state lines. Volunteer institutions in these two states were solicited to participate in the demonstration effort. Both community colleges **and** proprietary institutions in each state agreed to be involved in the project. Since the institutions involved were self-selected, the results reported in this part are illustrative and may **not** be statistically representative of all institutions within each state, or of former postsecondary vocational education students nationwide.

The study examined the feasibility of using State Employment Security Agency (SESA) Unemployment Insurance (UI) wage records with other existing Federal and state wage data bases to answer the following questions:

- What is the employment status of former postsecondary vocational education students?
- What are the long-range workplace outcomes such as job retention and earnings growth of former students?
- Can performance measurements such as placement rate and training-related placements for institutions and programs be obtained from the use of state UI and other administrative data bases?

The administrative data sources referred to in this report are employment and earnings information that is already being collected for purposes other than for follow up of former students. **Step 2 of Chapter Seven** gives details about each of the administrative data sources pursued in the study and how each one can and cannot be used.

The demonstration project sought to answer these additional questions:

- What will the data and subsequent analysis reveal that is not already known from placement information gathered by vocational education institutions?
- Can employment and earnings information help create discriminating consumers?
- Can these data improve quality control within the education sector?
- Can overlooked indicators and hidden influences on outcome measures such as economic factors be added?
- Can the practice of performance measurement be improved through greater reliance on existing wage data sources?

With the incorporation of several **unique** features designed to help answer these questions, the demonstration project:

- addressed elements beyond the control of vocational educators, by taking into account the influence of external factors--economic indicators that may affect employment and earnings outcomes;
- enlarged the universe of former students beyond that used in past efforts undertaken at the state level, by including both public and private postsecondary vocational education institutions; and
- provided a long-range view of workplace experiences of former students, through access to over four years of wage records for one of the participating states.

The manner of presentation of the data and findings in this report reflects the fact that this was a demonstration project, rather than a pure research and evaluation study. The demonstration project collected data about former students of volunteer institutions within the two participating states. The data presented in **Chapter Four** may represent former students of one institution, one state, or both states. Refer to the discussion of each individual topic to ascertain which group is being referenced.

The next sections introduce data sources and the core of data elements utilized by the demonstration effort.

Data Sources

The demonstration project consolidated several different administrative data sources into a single format, called a comprehensive data platform. **Step 5** of **Chapter Seven** explains how to build a data platform. **Chapters Five and Six** demonstrate how the use of a variety of data sources adds to the richness of the analysis and to final results.

Altogether, 22 sources of existing administrative data sources were assembled and analyzed to answer the proposed questions. The findings of the demonstration project reflect the following data sources:

- Individual student data for all participating postsecondary vocational education institutions in two states;
- Specific curricula data for all participating postsecondary vocational education institutions in two states;
- State UI wage records data for employees covered by state law;
- Adjacent-state UI wage records data for employees covered by that state's statutes;
- U.S. Office of Personnel Management file data for Federal civilian employees employed during 1990; and
- U.S. Department of Defense file data for personnel entering the military between FY85 and March 1990.

Institutional data were acquired from private career schools, a State Board for Community Colleges, and a State Higher Education Coordinating Board. All participating institutions did so on a voluntary basis, with full confidentiality to protect individuals and institutions. In the eastern state participating in the demonstration project, there were five cooperating community colleges with 1,631 students and eight participating proprietary schools with 3,900 students. In the midwestern state, there were nine cooperating community colleges with 4,778 students and six participating proprietary schools with 1,195 students. Altogether, 28 institutions were involved in the demonstration project and 11,504 student records were available for analysis.

The next paragraphs give an overview of each data source used in the demonstration project. **Step 2 in Chapter Seven** of this report discusses each data source in detail.

State UI Wage Records

State UI wage data are generally maintained by the unemployment compensation division within each state's employment security agency. Each employer who is required to comply with a state's unemployment compensation laws submits a quarterly wage report. By the mid-1980's, three-fourths of the states had committed to the collection of these earnings records for the routine administration of unemployment compensation programs.

In 1984, Congress mandated that **all** states collect quarterly earnings information from employers, beginning no later than October 1988, to facilitate the verification of income and eligibility for selected Federal benefit programs. As of March 1992, only Massachusetts and New York did not collect this information through their State Employment Security Agencies, with legislation pending in Massachusetts to do so.

Chapter Seven of the report describes State Employment Security Agency (SESA) wage record data in depth. Here, the following essentials are noted:

- Employer coverage requirements and the definition of reportable earnings are determined by each state, although there is substantial uniformity among the states.
- Each employee's total quarterly earnings are reported by social security number, and with the employer's own unique identification code.
- Industry and geographic codes are usually found in a separate file maintained by each State Employment Security Agency, and care must be exercised to understand how to interpret these with respect to an individual employee.
- Only a few states collect information about the number of hours or weeks an employee worked during a quarter.
- Only Alaska collects occupational detail about reported employment.

Employers are required to report within one month following the end of a quarter, and the State Employment Security Agency is required to have these data available for unemployment compensation program administration by the beginning of the following quarter. This means that, in principle, a quarter's wage record data are available three months after that quarter ends. Depending on how and when access to these records is requested, a four- to six-month lag should be expected.

Readers need to be aware of the limitations of State UI wage data. State UI wage records do not generally include occupational or wage rate information. Therefore, one cannot determine if students are employed in the field in which they were trained. Although wage records contain employer's Standard Industrial Classification (SIC) codes, these do not translate directly into the Classification of Industrial Program (CIP) codes often used by vocational education institutions. For example, the SIC code for IBM would not indicate if an individual employee were a computer programmer, a secretary, or a janitor. To address this limitation of State UI wage data, Florida supplements it with an employer survey.

The demonstration project contacted a total of five State Employment Security Agencies (SESAs), three of which were in adjacent states to one of the states participating in the demonstration project, for UI wage data records. Data were available from the SESAs for all quarters from 1985 through 1990, and in some cases, for the first three quarters of 1991. Most of the data presented in this report cover the years 1985 through 1990.

State UI wage data address two questions frequently asked about postprogram employment and earnings outcomes:

- Do former students work in the state where they attended school?
- How much do they earn each year?[19]

State UI wage data can be used to conduct a variety of interesting analyses. Many topics of analysis using state UI data are discussed in **Chapter Five** on the project's findings.

Adjacent State UI Wage Records

Adjacent state UI wage records refers to covered employment in a state adjacent to the one that houses the educational institutions under study. Adjacent state UI wage records data are available for employees employed in a quarter or in a combination of quarters. Whether the adjacent state will respond to a request to cross-match social security numbers of former students from another state to their records may depend on the adjacent state's statutes, regulations, and procedures regarding data confidentiality and security.

Chapter Five presents data from three states adjacent to one of the demonstration project's state. Linking with records across state boundaries does not have to occur with the same frequency as in-state matching.[20] For postprogram purposes, if a stable percentage of out-of-state employment is observed for a chosen unit-of-analysis, then this figure can be used until a need to verify the continuing accuracy of the number arises. The practicality of this approach depends upon the intended use of the resulting estimates. The need for accuracy must be weighed against the additional costs of obtaining these data.

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The demonstration project found that almost seven percent of the former community college students in one participating state were found working in an adjacent state six years later. This fact indicates the practical importance of considering the development of interstate agreements for this type of data sharing.[21] (See Table 2 in Chapter Five.)

U.S. Office of Personnel Management

The U.S. Office of Personnel Management was asked to provide only a snapshot of Federal civilian employment status as of December 1990, because the costs to provide data on earlier periods were prohibitive. (See Table 2 in Chapter Four.) The percentage of former students who later become Federal civilian employees will vary among specific curricula, schools, and even states depending upon the location and occupational skill requirements of Federal employment opportunities.

U.S. Department of Defense Manpower Data Center

The U.S. Department of Defense Manpower Data Center information in this report covers any military enlistment from FY 85 through the second quarter of 1991. The demonstration project found very few former students that later served in the military. However, many enlistees join to qualify for educational benefits, so any policymaker or practitioner who intends to trace postprogram outcomes for high-school leavers would expect to find a higher level of military service than that shown in this report.

There is an interesting but untapped potential in the linkage of military service and postsecondary education student records. Little is known about the transferability of military occupational assignments to civilian work settings. The matching of military and school records permits an investigation of the ties between military training and work experience, and subsequent postsecondary educational pursuits.

Where Can Data on Students Be Found?

There are **three** sources for student records:

- A few states have identifying information on students at the state level. This may be a statewide system for collecting data on students of publicly-funded institutions including community colleges and four-year colleges and universities.
- The state agency responsible for regulating proprietary institutions may have data on these institutions' students.
- Educational institutions have records on current and former students.

Chapter Five presents data on the 11,504 former students in the two demonstration states. In the presentation of data, all cells with fewer than three cases are censored to protect the identities of former students. Whenever there are fewer than three cases for the particular unit of analysis, this type of censoring can help to prevent identification of a particular student or institution.

It should be emphasized that the chief limitation in conducting reliable analysis for the demonstration project was not related to the State UI record data. Rather, difficulties stemmed from the incompleteness and incompatibility of student records across the participating institutions.

Core of Data Elements

The manner in which information about students can be gathered depends upon the system used for keeping student records, state legislation, and regulations regarding confidentiality of records and data security. The **essential** data element from school records is the social security number of the former student. This is the identifier that will link school records to state UI wage data records and other data sources. Refer to **Step 3 in Chapter Seven** for information on the legality of using social security numbers, on protecting the confidentiality of students, and on other important considerations that arise when using social security numbers for record linkage.

To relate employment and earnings outcomes to student characteristics, the demonstration project gathered the following data elements from institutional records: gender, race/ethnicity, and date of birth. The marital status of students can also be helpful, if available.

To compare outcomes among programs within an institution or among institutions within a state, the demonstration project utilized the following data elements:

- date of school entry;
- date of school exit;
- program of study using CIP code (when possible);
- competency scores;
- grade point average;
- completion status; and
- type of degree earned such as a certificate or an associate degree.

The county of residence of former students is useful in relating workplace experiences of former students to local economic conditions.

In summary, to analyze employment and earnings outcomes in relationship to student characteristics, program of study, and institution attended, the demonstration project used:

- data elements such as prior education and the student's educational goal at the time of application for admission;
- data elements that become available only during a student's enrollment, such as grades and competency scores;
- data elements available only at the time of final program exit, such as grade point average or degree obtained;
- data elements on program of study; and
- student data elements such as gender, race/ethnicity, and date of birth.

Student Demographics

In interpreting employment and earnings data, it is important to consider that there may be differences in student demographics across schools and among programs within the same school. The demonstration project illustrates how student demographics can be taken into account when employment and earnings data will be used for institutional management and policy purposes. **Chapter Five** further discusses the effects of student demographics on employment and earnings outcomes.

Data Elements and Adjacent State UI Wage Records

If a state establishes a performance standard for postprogram employment, then both in-state and out-of-state employment data will be of interest to policymakers, educators, and administrators. Other data elements such as industrial affiliation, job retention, and earnings paths can be obtained from an adjacent state through a generally more elaborate data acquisition effort. This effort will increase costs for collecting and archiving longitudinal data as well as for standard data processing.

External Factors

Local labor market conditions can greatly influence the types of jobs secured and job earnings. Changes brought on by a recession, plant closings, reductions-in-force, or new requirements for specific occupations may not affect all areas of a state equally. These changes may also affect employment and earnings differently.

Because it may be misleading to release program- and school-specific information without explaining differences in student populations, school programs, and local economic conditions, the demonstration project incorporated in its study data on those external factors that are beyond the control of vocational educators.

External factors are measures of local economic conditions and changes over time that can affect employment and earnings outcomes. Educators have long opposed attempts to use program evaluations based on student outcomes as performance measures, citing the unfairness of blaming the education community when economic conditions weaken. Industry and occupational changes, emerging technologies, and the overall employment/unemployment dynamics in the local economy may affect the employment and earnings of former students.

To account for external factors, the demonstration project incorporated data on key local economic factors such as employment/unemployment rates, and growth level of county by building permit issuance. **Chapter Five** explains how local economic factors affect employment and earnings of the former students in the two demonstration states. **Step 3** in **Chapter Seven** provides procedures for collection of data on external factors.

Summary

A broad range of data elements can be pursued and analyzed through linking student records with the existing administrative sources discussed in this report. The extent of the analysis that can be undertaken depends on the data elements selected for collection. But, the social security number of every student must be provided in order to link the student records with the state UI wage records and other data sources.

Chapter Five follows and presents information on the workplace experiences of former students in the two demonstration states, and policy questions and implications raised by the project's findings.

V.

FINDINGS OF THE DEMONSTRATION PROJECT

Introduction

Chapter Four presents the findings of the two-state demonstration project on the use of administrative wage records to determine the workplace experiences of former students of public and private vocational education institutions. The findings for each of the following topics of inquiry are discussed:

- Employment and Earnings and Programs
- Effects of Data Collection Decisions on Outcomes
- Former Students at the Time of Initial Application
- Enrollment Persistence and Employment Rates
- Grades and Future Earnings
- Outcomes and Institutions
- Earning Gains of Former Students
- Student Characteristics and Outcomes
- Outcomes and the Local Economy
- Lessons Learned

The findings of the project illustrate the experiences in the labor market of former students of only those institutions that volunteered for the project, and therefore may not necessarily be representative of all former students within these two states or of former students nationwide.

As mentioned in **Chapter Four**, a total of 28 institutions participated in the demonstration project in the two states. In the eastern demonstration state, there were five cooperating community colleges with 1,631 students and eight participating proprietary schools with 3,900 students. In the midwestern state, nine community colleges with 4,778 students and six proprietary schools with 1,195 students were involved. A total of 11,504 student records were analyzed to present the findings in this chapter.

The figures presented in this chapter represent actual data collected during the two-state demonstration project. No data on former students reveals the identity of any participating institution as all institutions were promised anonymity in return for their participation in the demonstration project. Administrators received feedback only on the former students in each of the occupational programs offered by their own institutions. No administrator received information about any other school's former students. Administrators also received no information that might reveal the identities of former students of their schools. The demonstration project achieved this level of student confidentiality by censoring all cells with fewer than three cases, and by subsequently reviewing the resulting cross tabulations to assure that no former student's identity could be ascertained.

Readers are encouraged to carefully consider each illustration in light of the accompanying technical considerations and interpretive cautions. Policy and research questions are presented for further consideration. As explained previously, data and findings are sometimes presented in a different manner than in other kinds of reports, since this was a demonstration project rather than a research study or program evaluation.

Employment and Earnings and Programs

Table 2 displays employment and earnings information for former students of **five** participating community colleges in **one** state of the demonstration project. It shows actual reported earnings figures for former students of all participating community colleges using **only** state UI wage records. Table 2 reflects the following six data sources:

- Individual student and curricula data from each of five participating community colleges in one state; and
- State UI wage records data for employees employed **any** one quarter of a year and for employees employed in **all** four quarters of a year.

Fall 1984 first-time enrollees in selected occupational programs make up the universe in Table 2.[22] Enrollment figures are fall 1984 enrollment totals. Two occupational programs--**Secretarial Science and Real Estate**--were selected to illustrate important findings of the demonstration effort. The **All Programs** part of the table includes **all occupational programs** offered by the five community colleges in the fall 1984 semester.

Information on credit hours earned and highest degree received at the community college is available, but neither is reflected in Table 2.[23] The year 1987 was chosen as the first year to trace the postprogram status of former first-time[24] community college enrollees in the Fall 1984 semester. Due to budget limitations, data were collected for only four years.

Table 2 addresses two key questions about employment and earnings:

- Do the former students work in the same state where they attended school?
- How much do they earn each year?[25]

TABLE 2
Employment and Earnings by Program for 1984 Community College First-Time Enrollees
(All Participating Institutions In One State)

PROGRAM: SECRETARIAL SCIENCE (Enrollment: 275)

Year	State Wage Records (1)					
	# Employed in some qtr.	Percent Employed	Mean Earnings	# Employed all 4 quarters	Percent Employed	Mean Earnings
1987	180	65%	$ 9,699	125	45%	$ 11,901
1988	174	63%	$ 10,665	109	40%	$ 14,333
1989	162	59%	$ 13,179	109	40%	$ 16,989
1990	152	55%	$ 13,466	93	34%	$ 17,443

PROGRAM: REAL ESTATE (Enrollment: 142)

Year	State Wage Records (1)					
	# Employed in some qtr.	Percent Employed	Mean Earnings	# Employed all 4 quarters	Percent Employed	Mean Earnings
1987	93	65%	$ 26,842	78	55%	$ 29,471
1988	95	67%	$ 26,239	71	50%	$ 33,291
1989	90	63%	$ 29,068	68	48%	$ 33,843
1990	88	62%	$ 31,976	64	45%	$ 37,815

ALL PROGRAMS: (Enrollment: 1631)

Year	State Wage Records (1)					
	# Employed in some qtr.	Percent Employed	Mean Earnings	# Employed all 4 quarters	Percent Employed	Mean Earnings
1987	1084	66%	$ 12,917	743	46%	$ 16,308
1988	1073	66%	$ 14,018	712	44%	$ 18,372
1989	1010	62%	$ 16,175	685	42%	$ 20,488
1990	974	60%	$ 17,297	589	36%	$ 22,701

NOTES: (1) State employment figures were calculated using two rules. Rule 1 - include all enrollees with non-zero earnings in any one or more quarters of the year. Rule 2 - include only those enrollees with non-zero earnings in all four quarters of the year.

Table 2 represents a composite of all five institutions because each one was promised anonymity in return for participation in the demonstration project. The results given to administrators of each community college were an identical format, but included only the former students in each of their own occupational programs.

The first three columns of Table 2 reveal the actual reported annual earnings of former students with reported earnings during **any** one or more quarters in a designated year. The second set of three columns displays the annual earnings for **only** those former students with reported earnings in **each** of the four quarters of the designated year. These two sets of figures (i.e., those employed all four quarters versus those employed one or more quarters) paint remarkably disparate pictures for both percent employed and mean annual earnings.

The findings on the employment and earnings outcomes of these 1984 first-time enrollees of community colleges are:

1. **The highest percent employed figures appear during the first year of observation for both the Secretarial Science curriculum and for All Programs, but not for the Real Estate program.[26] The typical pattern is to see a slow attrition of the percent employed figure over time, as some former students return to school, withdraw from the workforce, or leave the state to accept employment elsewhere.**

2. **With the single exception of a slight 1987-88 reduction in average earnings reported for former enrollees in the Real Estate curriculum,[27] all other former students' earnings show an increase over time.**

3. **From 17 to 23 percent more of the 1984 first-time enrollees were found to be employed in any one or more quarters than were found to be employed in all four quarters for the selected occupations.**

4. **The more stringent four-quarter earnings criterion lowers the number of former students who are included in the employment rate, on average, 20 percentage points.**

5. **Placement information at program exit, combined with follow-up information one quarter later, overstates by a substantial amount the number of former students who are employed year-round, at least within the same state.[28] The reason for this overstatement is that the information is based on a single quarter.**

The comparison of information obtained for one quarter in a year to that obtained for four quarters is important because it casts doubt on the sufficiency of snapshot information (i.e., information for just one quarter in a year) as a stand-alone measure of postprogram employment status. Only the four-quarter criterion actually answers the following questions:

- Do former students find year-round jobs?
- What do they earn annually?
- Do their earnings improve over time?

Technical Consideration

For releasing information to the public, a rule of thumb might be to require that **percent employed** and **average earnings** figures always be drawn from the same population and presented together. The reason why is apparent when the two sets of columns (i.e., those for "employed in some quarter" versus those for "employed in all four quarters") are compared. The **percent employed** figure can be maximized by selecting reported earnings in any quarter. The **average earnings** figure can be maximized by requiring that reported earnings appear in each of the four quarters, perhaps with a further stipulation that a floor level of earnings in each quarter must be reported. Release to the public of these two figures would create an apples and oranges situation; misunderstanding is guaranteed.

Interpretive Caution

It is unwise to generalize about an expected pattern of employment over time unless careful thought has been given to the relative weights of different forces that are present in a particular setting. For example, **if former students at a community college continue on to a four-year college, then the percent employed and average earnings figures may temporarily reflect this status (if the students do not simultaneously work in covered jobs).** Part-time employment while in school, coupled with seasonal employment during the summer (and perhaps over a Christmas break), creates a very uneven quarter-to-quarter flow of earnings. This example highlights the importance of thinking through whether more than one quarter of UI wage record data will be needed to provide accurate answers to the questions being asked.

The **Secretarial Science**, **Real Estate**, and **All Programs** presentations in Table 2 were chosen to demonstrate the **importance** of the unit-of-analysis issue. The **All Programs** average reflects not only the two curricula shown, but also all other occupational curricula not shown separately in Table 2. This means that comparison of the **All Programs** results among institutions will reflect differing enrollment distributions across the curricula, as well as other factors such as student demographics.

Summary of Table 2

A summary of Table 2 appears in Figure 12. It lists the key "consumer rights" questions that data from Table 2 answers, the key data elements used, the data sources, and some important technical considerations and interpretive cautions.

SUMMARY OF TABLE 2

Key Questions Answered for "Consumer Rights" Information

- What percent of students worked all four quarters during the year?
- What percent of students worked at least some quarter during the year?
- What were the mean earnings for students who worked all four quarters?
- What were the differences of employment and earnings outcomes among programs?

Key Data Elements Used

- Social security numbers of former students
- Program data for each former student (date of entry, date of exit, degree received, etc.)

Data Sources

- School-based
- State UI wage records

Some Technical Considerations and Interpretive Cautions

- Do not extrapolate findings from a limited data set for predictable patterns over time.
- A rule of thumb might be that the percent employed and average earnings figures should always be drawn from the same cohort of former students and presented together.

Figure 12. Summary of Table 2

Findings with Additional Data Sources

Table 3 displays the information from Table 2 plus earnings data collected from three additional sources. These sources are:

- adjacent state UI wage records data for employees employed any one quarter during 1990;
- U.S. Office of Personnel Management file data for Federal civilian employees employed during 1990; and
- U.S. Department of Defense file data for personnel entering the military between FY85 and March 1990.

State UI wage records were requested from three states adjacent to the one where the community colleges were located. Additionally, data from the U.S. Office of Personnel Management wage records and U.S. Department of Defense Manpower Data Center were requested. With these additional data sources, new information on the workforce experiences of these 1984 first-time enrollees in the five community colleges was learned:

- **Approximately 6.7 percent of the 1,631 former community college students were found to be working in one adjacent state six years later.**
- **Nine percent of the former students who first enrolled in the fall of 1984 were identified as Federal civilian employees as of December 1990.**
- **Very few of the former community college enrollees had later military service.**

It should be noted that matching student records with adjacent-state UI wage records does not need to occur with the same frequency as in-state matching. Also, earnings data from the U.S. Department of Defense requires a more complex approval process than determining if any former students were found in a cross-match of social security numbers.

TABLE 3
Employment and Earnings by Program for 1984 Community College First-Time Enrollees
(All Participating Institutions)

PROGRAM: SECRETARIAL SCI (Enrollment: 275)

Year	Own State Wage Records (1)						US Office of Personnel Management (2)			US Dept of Defense Manpower Data Ctr (3)	ADJACENT STATES RECORDS (4)		
											State 1	State 2	State 3
	# Employed in some qtr	Percent Employed	Mean Earnings	# Employed all 4 qtrs	Percent Employed	Mean Earnings	Number Employed	Percent Employed	Mean Earnings	Began military svce FY1985 - Mar 1990	Number Employed	Number Employed	Number Employed
1987	180	65%	$ 9699	125	45%	$ 11901							C
1988	174	63%	$ 10665	109	40%	$ 14333							
1989	162	59%	$ 13179	109	40%	$ 16989							
1990	152	55%	$ 13466	93	34%	$ 17443	24	9%	$ 19323	C (5)	19	6	

PROGRAM: REAL ESTATE (Enrollment: 142)

Year	Own State Wage Records (1)						US Office of Personnel Management (2)			US Dept of Defense Manpower Data Ctr (3)	ADJACENT STATES RECORDS (4)		
											State 1	State 2	State 3
	# Employed in some qtr	Percent Employed	Mean Earnings	# Employed all 4 qtrs	Percent Employed	Mean Earnings	Number Employed	Percent Employed	Mean Earnings	Began military svce FY1985 - Mar 1990	Number Employed	Number Employed	Number Employed
1987	93	65%	$ 26842	78	55%	$ 29471							C
1988	95	67%	$ 26239	71	50%	$ 33291							
1989	90	63%	$ 29068	68	48%	$ 33843							
1990	88	62%	$ 31976	64	45%	$ 37815	5	4%	$ 37383	C	C	C	

ALL PROGRAMS (Enrollment: 1631)

Year	Own State Wage Records (1)						US Office of Personnel Management (2)			US Dept of Defense Manpower Data Ctr (3)	ADJACENT STATES RECORDS (4)		
											State 1	State 2	State 3
	# Employed in some qtr	Percent Employed	Mean Earnings	# Employed all 4 qtrs	Percent Employed	Mean Earnings	Number Employed	Percent Employed	Mean Earnings	Began military svce FY1985 - Mar 1990	Number Employed	Number Employed	Number Employed
1987	1084	66%	$ 12917	743	46%	$ 16308							11
1988	1073	66%	$ 14018	712	44%	$ 18372							
1989	1010	62%	$ 16175	685	42%	$ 20488							
1990	974	60%	$ 17297	589	36%	$ 22701	153	9%	$ 26850	18	110	22	

NOTES:
(1) Own state employment figures calculated using two rules. Rule 1—include all enrollees with non-zero earnings in any one or more quarters of the year. Rule 2—include only those enrollees with non-zero earnings in all four quarters of the year.
(2) Federal OPM statistics based on December 1990 data.
(3) U.S. Dept. of Defense Manpower Data Center statistics based on fiscal year 1985 through March 1990 data.
(4) State 1 statistics include all enrollees employed at any time between first quarter 1990 and second quarter 1991. State 2 statistics include all enrollees employed at any time between third quarter 1990 and third quarter 1991. State 3 statistics include all enrollees employed first or second quarter 1987.
(5) The letter "C" indicates that a cell has been censored because fewer than three observations are found in this cell. This is necessary to comply with confidentiality requirements.

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The use of additional data sources including out-of-state information provides a more comprehensive picture of the labor market experiences of the former community college students. If a performance standard is established for employment outcomes, then both in-state data (as shown in Table 2) and out-of-state data (displayed in Table 3) would be of interest to policymakers and vocational educators. A summary of Table 3 appears in Figure 13.

SUMMARY FOR TABLE 3

Key Question Answered

- What was learned about the former community college students when additional data sources were added to the data base?

Key Data Elements

- Social security numbers of students
- Program information on each student

Key Data Sources

- Adjacent state UI wage data
- U.S. Office of Personnel Management wage records
- U.S. Department of Defense Manpower Data Center records

Key Technical Considerations and Interpretive Cautions

- Matching student records with adjacent-state UI wage records does not need to occur with the same frequency as in-state matching.
- Earnings data from the U.S. Department of Defense requires a more complex approval process than employment information (i.e., whether any former students were found in a cross-match of social security numbers).

Figure 13. Summary for Table 3

Effects of Data Collection Decisions on Outcomes

The previous section demonstrated that the choice of collecting data from either "any quarter" or from "all four quarters" of wage data records affects the results obtained for both employment rates and average earnings levels. Figure 14 addresses two related questions important to determining and **understanding** former students' employment and earnings:

- Should a one-quarter or multiple-quarter approach be used for longitudinal coverage?
- If only one quarter is represented, which quarter provides the most reliable results?

As was concluded in the discussion in Table 2, it is clear that the choice of **criterion** for documenting former students' employment in a designated year affects the **resulting reported level of employment** for an institution or state. Figure 14 approaches the issue of year-round employment from an earnings perspective. Consumer questions frequently focus on the annual earnings of former students in specific occupational programs or institutions.

Current Practice

Some pioneers in the use of state wage record data calculate an "annualized" earnings figure by requesting only one quarter of data, then multiplying this quarterly earnings figure by four. The demonstration project tested the adequacy of this approach by comparing the calculated "annualized" figure with actual annual earnings based on four quarters of wage record data for one of the participating states. Figure 14 shows the results of this test.

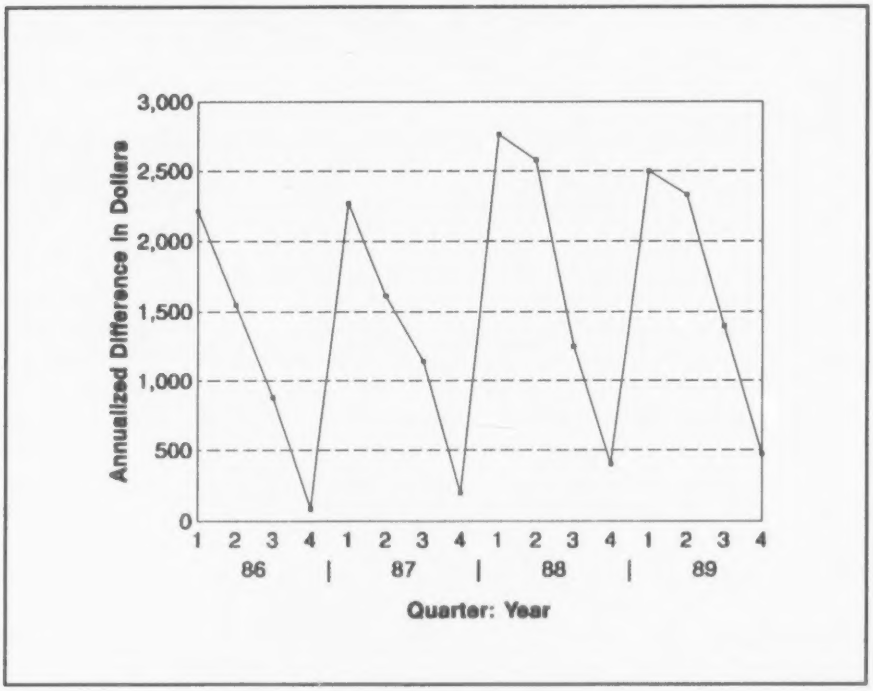


Figure 14. **Difference Between Annualized Quarterly Earnings and Actual Annual Earnings**

In Figure 14, the horizontal axis indicates quarterly data points beginning with the first quarter of 1986 (1986:1) and extending through the fourth quarter of 1989 (1989:4)--a four-year time span. The vertical axis measures the **difference** between a calculated "annualized" earnings figure based on a particular quarter's wage record data multiplied by four and the actual annual earnings figure, obtained by adding the earnings from all four quarters of that year. The following findings were derived from Figure 14:

- A 1986 annualized earnings figure calculated by multiplying first quarter 1986 wages by four overstates the actual 1986 average annual earnings figure by $ 2,200.

- Annualized earnings figures calculated in the same way using 1986:2, 1986:3, and 1986:4 wage record data also overstate actual 1986 average annual earnings by $1,500, $900, and $100 respectively. It follows that, for this state and for 1986, the first quarter is the worst choice as a basis for calculating annualized earnings using this formula, and the fourth quarter is the best choice.

The same quarter-to-quarter pattern prevails for each of the other three years of data included in Figure 14.

There is an urgent need to conduct similar tests with comparable data for other states, and for more recent quarters, to determine whether this pattern is replicated across states and in different economic conditions. Figure 14 makes a strong case for devoting attention to this issue as soon as possible.

Some pioneering states continue to use a single quarter of wage record data for postprogram accountability purposes. Others continue to use one quarter of data, but have recently changed which quarter they use. Still others are seeking guidance about how to proceed. All policymakers and practitioners are advised to pay close attention to the effects of data collection decisions on reported outcomes and to support immediate attempts to replicate the tests demonstrated in Tables 2 and 3 and Figure 14.

IMPORTANT NOTE

The **remainder** of this chapter **mixes** documented employment and earnings data acquired during the demonstration project from volunteering proprietary schools with that obtained from public postsecondary institutions. The intent is to **illustrate** how employment and earnings outcomes can be related to student, institution, and local economic data elements to meet a wide range of consumer demands for information.

Most of these analyses are for a limited subset of the data, often for a single institution. These illustrative presentations are **not** offered as a substitute for appropriate statistical analysis.

Former Students at the Time of Initial Application

The types of information presented in the next three figures will be of interest to prospective students and their families, school administrators and counselors at both the secondary and postsecondary levels, and those program staff who are responsible for system-wide accountability.

Figure 15 traces the employment rates of former students in one of the project states, who are known to have either a high school diploma or a general educational development (GED) certificate prior to postsecondary enrollment.

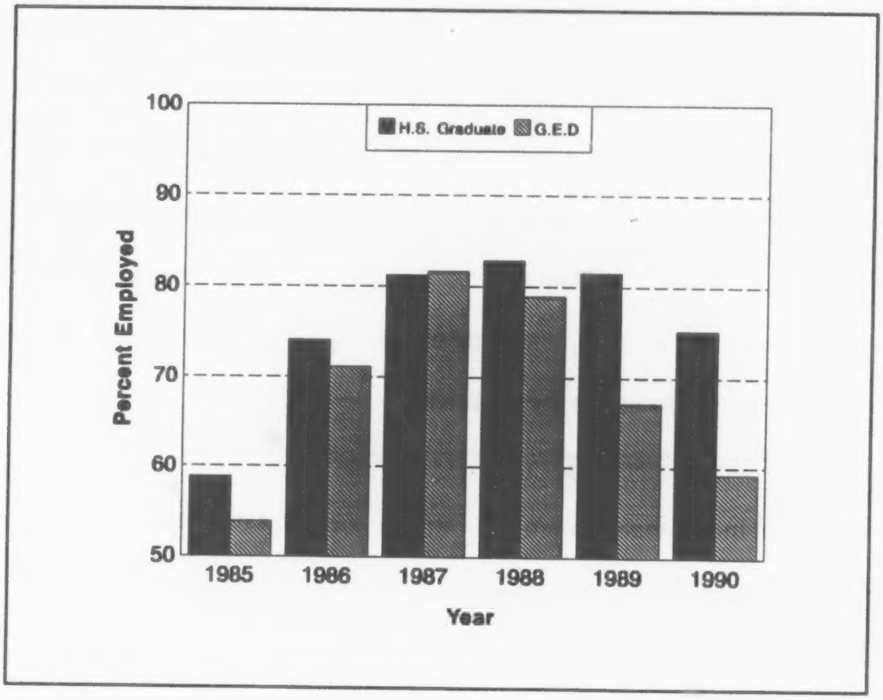


Figure 15. Employment Rate by Previous Educational Attainment

Figure 15 displays a divergence between the two groups in terms of documented employment in the last three years of the five-year period. These data show that:

- **By 1990, the end of the five-year period studied, a difference of 16 percentage points emerged between the employment rate of individuals who had high school diplomas and that of individuals with GEDs.**
- **For former students with GEDs, the documented employment rate fell almost 12 percentage points from 1988 to 1989 and another 8 percentage points by 1990.**

A longitudinal comparison of earnings, which is not shown here, reveals no consistent long-term difference over the five-year period between those who received a high school diploma and those who received a GED certificate. This suggests that the underlying difference may lie in participation rates in the labor market, rather than in earnings differences among those who do work. This is obviously an important policy issue that warrants continued investigation.

The data in Figure 15 also suggest that the weakening of the economy affected the employment rates for these former students. For example, the employment rate of former students with a GED fell from 78.9 percent in 1988 to 59.2 percent in 1990, a significant drop for this group of former students.

Students' Goals and Outcomes

Figure 16 relates the employment pattern of former students' to their stated goal at the time of enrollment, which was extracted from the administrative records of cooperating institutions in the demonstration project. The project examined three student goals:

- to take a course without pursuing a degree;
- to earn a certificate; or
- to earn an associate degree.

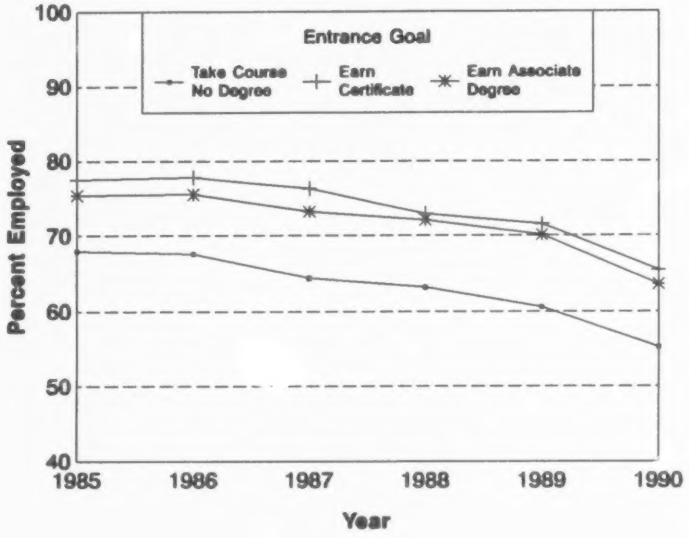


Figure 16. Employment Rate by Educational Goal at Time of Entry to the Institution

Figure 16 shows the following:

- **The highest employment rate - - 77.8 percent - - was found in 1986 for those former students who had the goal of earning a certificate at program entrance.**
- **Over 75 percent of those former students whose goal at program entrance was to earn an associate degree were employed in 1986.**
- **For those former students taking a course with no degree plans, almost 68 percent were found to be employed in 1986.**

The paths of documented employment shown in Figure 16 suggest the value of linking information about community college enrollment with information about subsequent enrollment in four-year colleges and universities in a state. The lower employment rate for those who planned to pursue an associate degree compared to those who planned to earn a certificate may be explained by their higher probability of continuing on to pursue additional postsecondary education. Based on the data that are presented in Figure 16, this is pure speculation, but the availability of additional higher education data would permit testing of this hypothesis.

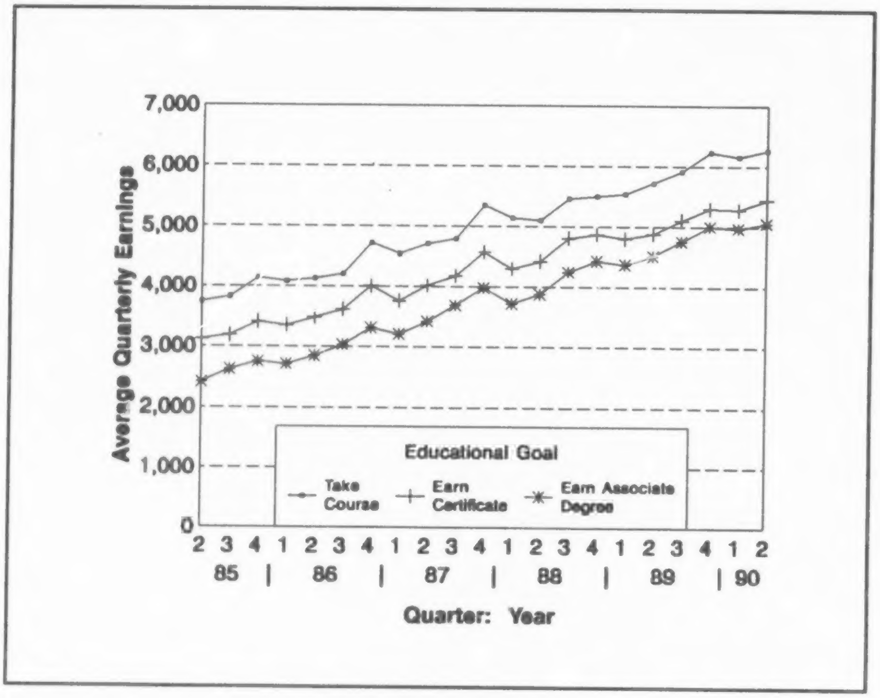


Figure 17. Average Quarterly Earnings by Educational Goal at Time of Entry to the Institution

Figure 17 displays earnings outcomes of the same group of former students with the same classifications of stated goals as described for Figure 16. The revealed pattern is consistent with the speculation stated in the previous paragraph. The members of each "educational goal" group enjoyed increased average earnings overtime, with no crossover patterns. The earnings of those desiring an associate degree were lower than those of the other two groups--possibly because of time spent in continued education.

Figure 17 demonstrates why knowledge of previous and concurrent employment is important in examining particular types of policy issues. The intent of the student at program entrance may have a greater impact on employment and earnings outcomes than has been previously acknowledged. These findings indicate that policymakers should consider the following:

- Course takers without a degree goal are likely to be seeking a specialized skill.
- Those students who seek a certificate are likely to enter full-time employment soon after program exit.
- Some of those who seek an associate degree will combine work and school while doing so, and some will continue on to pursue a four-year degree.

Average rates of documented employment and earnings, which do not take these types of differences into account, will be less reliable as guides to decision making by future students, policymakers, and school administrators.

Together, Figures 15, 16, and 17 suggest why and how longitudinal information might be used within a single institution, school system, or state to develop refined uses of information that is available even before students are admitted to a postsecondary institution or program. The observed deterioration in employment rates for 1989 and 1990 noted in each of the figures coincides with the softening of local economies in both of the demonstration project states. This suggests that longitudinal data measures the susceptibility of former students to fluctuations in employment opportunity.

Enrollment Persistence and Employment Rates

Enrollment persistence figures provide a look at what happens between the time students enroll in a program and the time they leave. Most of the figures in this section on enrollment persistence use the employment and earnings data extracted from state UI wage records. Figures 18, 19, and 20 illustrate why changes that have occurred in the demographic mix of postsecondary enrollments increase the importance of inquiries about enrollment persistence.

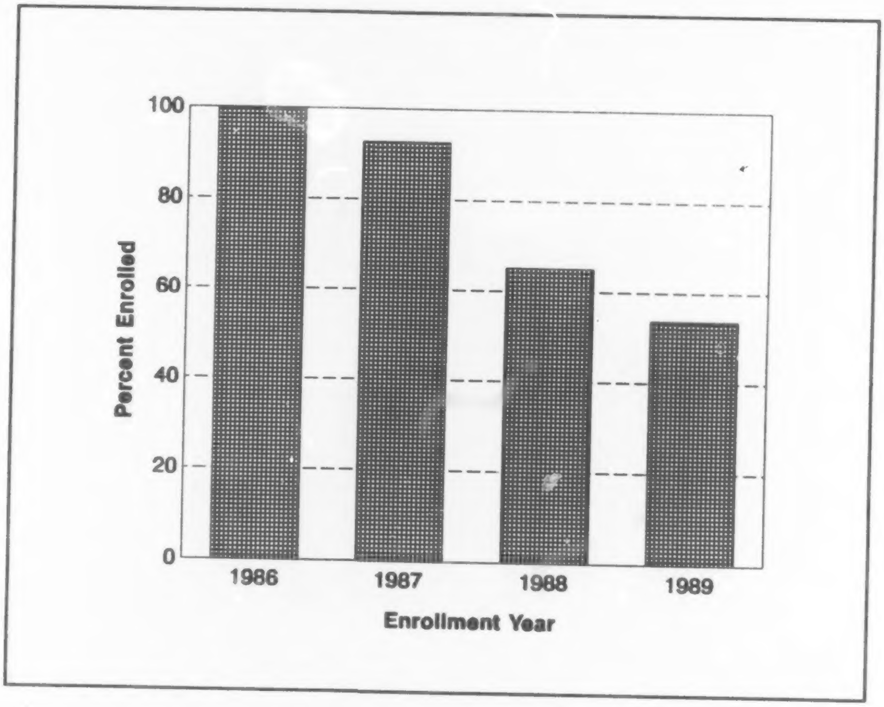


Figure 18. Subsequent (Continuing) Enrollment of 1986 First-Time Community College Enrollees

Figure 18 shows the percentages of fall 1986 first-time enrollees in five community colleges in one of the demonstration project states who subsequently re-enrolled in the fall semesters of 1987, 1988, and 1989. Underlying what is shown in

Figure 18 are data elements that would permit us to determine demographic characteristics such as gender, race, age, and marital status of students who remain in school and those who do not. These findings can then be related to subsequent employment and earnings outcomes.

Figure 19 shows longitudinal enrollment data that reveal important differences in persistence rates for former white and non-white students. Readers who are familiar with postsecondary institutional research literature have seen similar evidence accumulating throughout the 1980's.

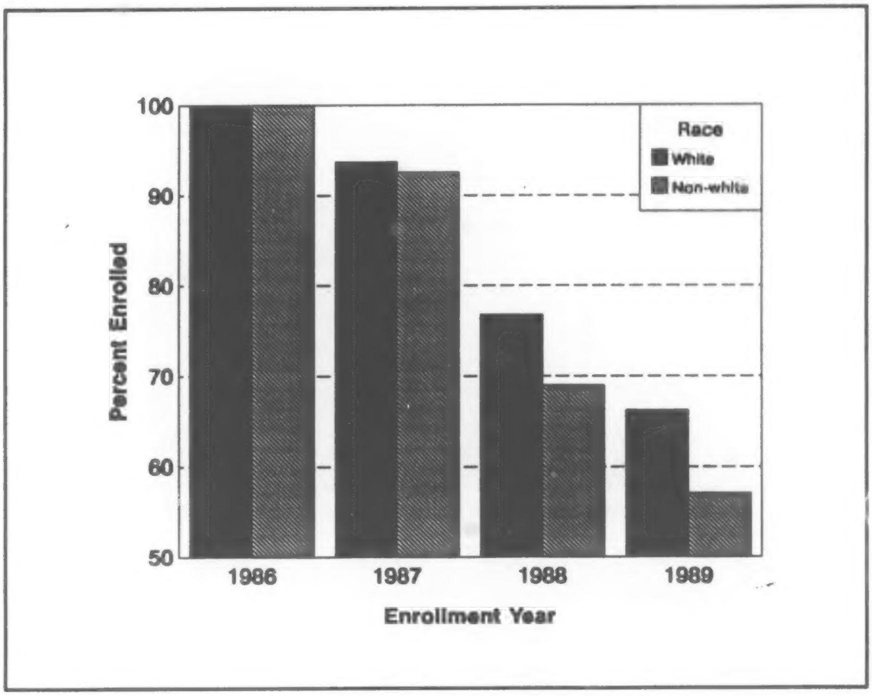


Figure 19. Subsequent Enrollment of 1986 First-Time Community College Enrollees by Racial Group

If the marital status of former students is available from school records, an analysis of the trends on enrollment persistence can be pursued as shown in Figure 20.

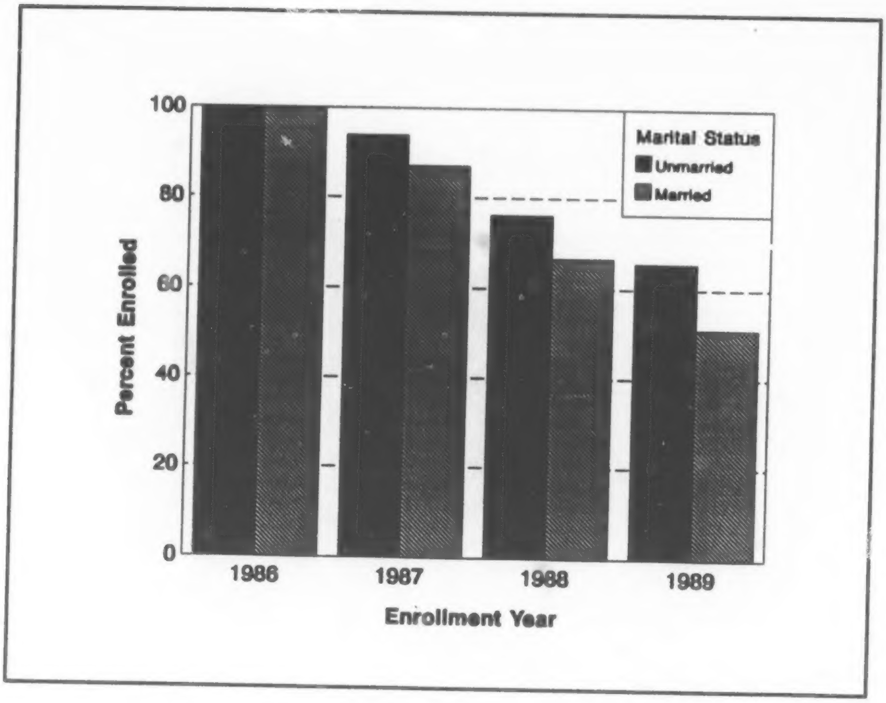


Figure 20. Subsequent Enrollment of 1986 First-Time Community College Enrollees by Marital Status

The next section discusses the effect of program completion on employment outcomes.

Program Completers and Employment

Figures 21 compares employment rates for all former students in the demonstration project's data base who have completed a program of study to those who attempted but did not finish.

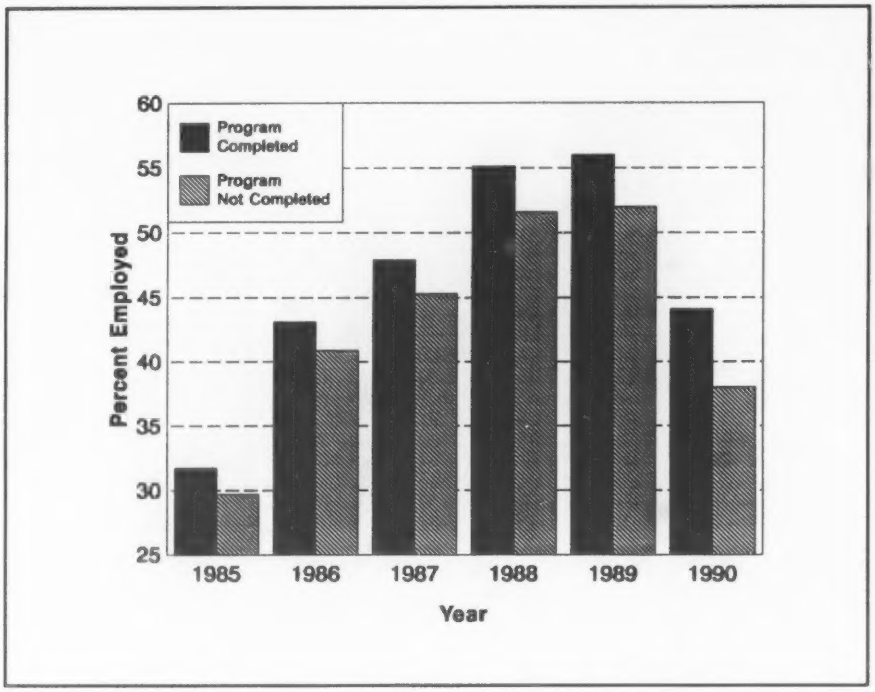


Figure 21. Employment Rate for Completers and Non-Completers of a Program of Study

For all years, the employment rate for completers is greater than the rate for non-completers. While both groups appear to have been affected by the recession that began in 1989, the non-completers appear to have been more severely affected.

Grades and Future Earnings

Figure 22 examines average earnings levels of former students over time by cumulative grade point average (GPA).

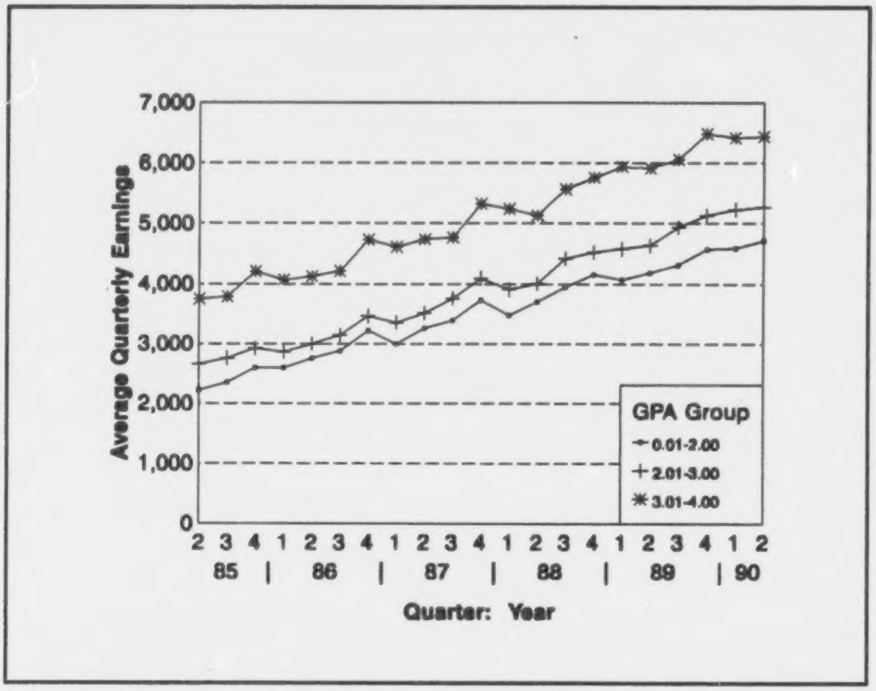


Figure 22. Average Quarterly Earnings by Grade Point Average at Program Exit

As Figure 22 shows, earnings increased steadily over a five-year period for all former students whose GPAs were known at the time of program exit. **Substantital differences in average earnings between those with the lowest cumulative grade point averages and those with the highest cumulative grade point average were found.** Thus, a substantial premium is being paid for college performance and this pattern is consistent over time. This type of information might be valuable to a prospective student investigating the benefits of time and effort in academic pursuits.

Fringe Benefits

The longitudinal approach is ideally suited for the more refined analysis that is necessary to discover reliable predictors of earnings differences. However, state UI wage records document only money earnings, and in some cases the money equivalent of a few types of in-kind payment. Fringe benefits, which now commonly exceed 30 percent of total compensation, are not included. As contract and temporary employment become more common, the unevenness of this aspect of compensation differences can be expected to grow. This means that measurement challenges will increase as well.

Using Data in Decision Making

This chapter has focused on consumer interests in relating employment and earnings information to what is known at particular points along a student's participation in postsecondary education--at the time of enrollment, while enrolled, and at the time of departure (Figures 15-22). **The types of student, counselor, or administrator decisions that are made at each of these stages are quite different.** For example:

- Students may decide to complete their programs of study, since those former students who did so had higher rates of employment.
- Since former students who had higher GPAs at program exit earn higher salaries, prospective students might decide that studying and making higher grades may "pay off" in the long term.
- Counselors who have reviewed these data may decide to offer counseling sessions to students with low GPAs to determine what factors might be affecting their academic work.

- Administrators may view the relationship between earnings and GPA as an indicator of a need for increased services, such as tutoring or remedial classes, to help students improve their chances of higher employment and earnings levels in the labor market.

The remaining sections of this chapter present data collected during the demonstration project illustrating other strengths of longitudinal data from existing wage records--the ability to relate information about student characteristics, institutional and program factors, and local economic conditions to students' employment and earnings.

Outcomes and Institutions

Figure 23 compares employment rates over a five-year period for former students at three community colleges in one of the demonstration project states. These former students were all enrolled in Data Processing Technology programs.

Figure 23 reveals significant outcome differences among institutions within a state. However, care must be taken not to draw conclusions too quickly from such evidence. The differences in employment rates might be explained by influences such as local economic conditions. Data such as those shown in Figure 23 should be used as a **starting point** for investigating accountability, not as a conclusion of such investigations.

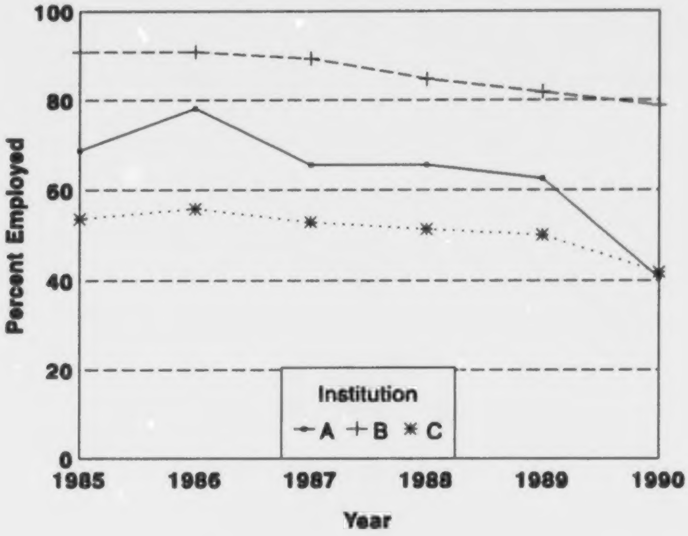


Figure 23. Employment Rate by Selected Institutions for Data Processing Technologies

The findings for these three community colleges in one state include:

- The employment rate of former students of Institution A is considerably higher than the employment rate of former students of Institutions B and C throughout the time period analyzed, 1985-1990.
- The employment rate of former students from Institution A increased from 1985 to 1986. However, it then dropped and leveled off until 1989, when it began a steep decline, dropping almost 20 percentage points by 1990.
- The employment rate of former students from Institution B was over 80 percent until 1990, when it dropped slightly below 80 percent.
- The employment rate of Institution C's former students never reached 60 percent during the five years examined, and by 1990 had fallen dramatically to about 40 percent.

The evidence of Figure 23 indicates that former students of Institutions A and C were far more significantly affected by the economic downturn of 1989 and 1990 than were former students of Institution B. Thus, such factors as course content, competence of the instructors, and grades of the former students may have had little to do, in this particular case, with the decrease in employment rates in 1989 and 1990.

Outcomes and Occupations

Figure 24 compares employment rates over a five-year period for former students in three different specializations within the Data Processing Technologies curriculum at a single community college.

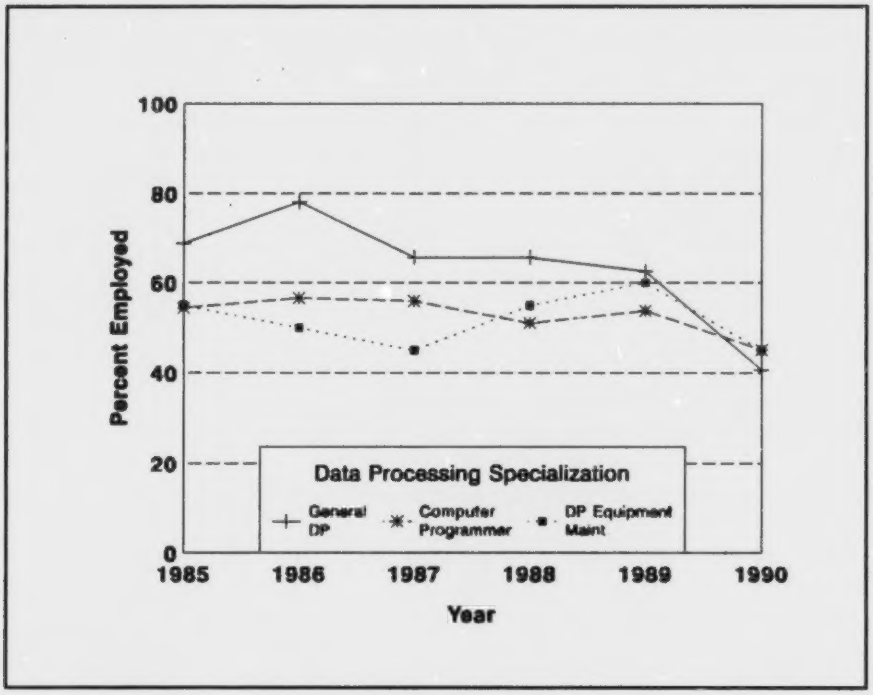


Figure 24. Employment Rates by Selected Data Processing Specializations for One Institution

Figure 24 demonstrates how employment outcomes may differ among specializations within a single curriculum at an institution. For example:

- **Although former students from the General Data Processing specialization enjoyed an increase in employment rate from 68.8 percent in 1985 to 78.1 percent in 1986, the rate began to decrease thereafter, culminating in a steep drop of 22 percentage points between 1989 and 1990.**
- **For former students in the Computer Programmer specialization, the employment rate was 54.4 percent in 1985 and 45.1 percent in 1990.**
- **The highest employment rate for former students in the Data Processing Equipment Maintenance group was 60 percent in 1989. But by 1990, this rate had fallen to 45 percent.**

Technical Consideration

The discussion of Figures 23 and 24 reinforces a point made earlier--the **choice of unit(s) of analysis** predetermines the types of **findings** that can arise. For management decisions at the curriculum level, presentation at the aggregate program level will be less useful. However, practitioners and policymakers must remember that the approach used here requires strict protection of the **anonymity of all former students and their employers**. The smaller the unit of analysis such as a particular semester's degree recipients in a single school's curriculum specialization the more likely it is that censoring of some types of data presentations may be necessary.

Earning Gains of Former Students

Figures 25 and 26 provide a context for further consideration of two issues presented in the previous section: (1) the careful interpretation of the data, and (2) the unit(s) of analysis chosen.

Figure 25 shows the five-year earnings paths for the former students included in Figure 24 in the previous section. These were students in three different Data Processing Technologies specializations within one community college.

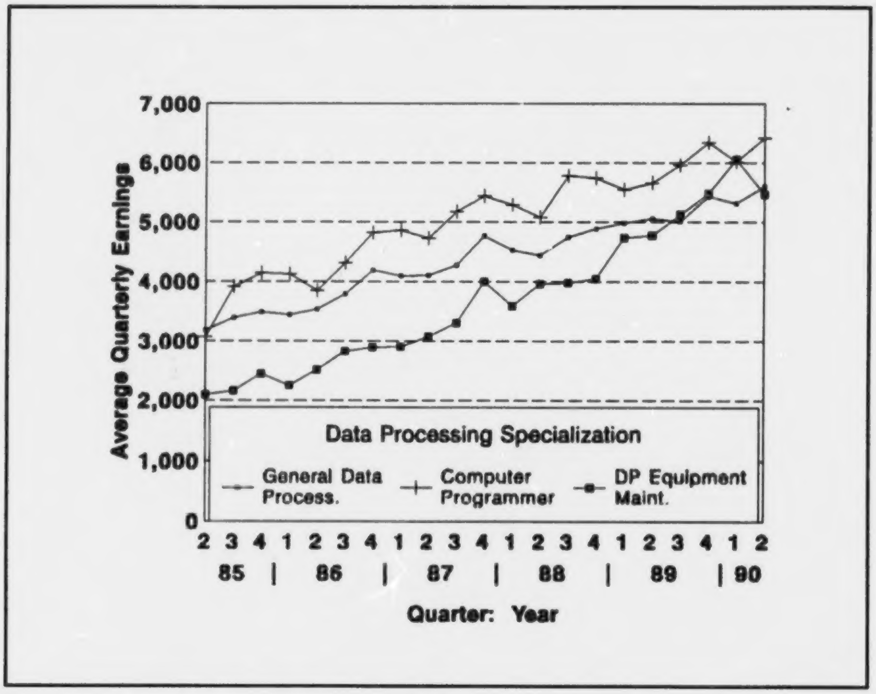


Figure 25. Average Quarterly Earnings for Data Processing Technologies

In Figure 25, the earnings paths of the three groups converged toward the end of 1989 and the beginning of 1990. When this pattern is considered in the context of the documented employment paths shown in Figure 24, it appears that any difference in outcomes occurred in labor force participation rates, rather than in the earnings of those who were working.

Prospective students may want occupational information, so they can determine whether there are differences in relevant employment opportunities for those who pursue particular curriculum specializations. As noted previously, occupational detail is not available in the existing administrative data bases used, but the program of study is available in student records and can be used for presentations of related data.

Differences Between Day and Night Students

Figure 26 traces the difference in the earnings paths between former day and evening students in the Office Specialist Program at one community college. For every quarter, the earnings of evening students are considerably higher than the earnings of daytime students. The difference in earnings paths is unlikely to be attributable to whether the sun was up or down! Student differences may be one reason for the earnings differences. However, differences in the faculties of daytime and evening courses may also be the reason.

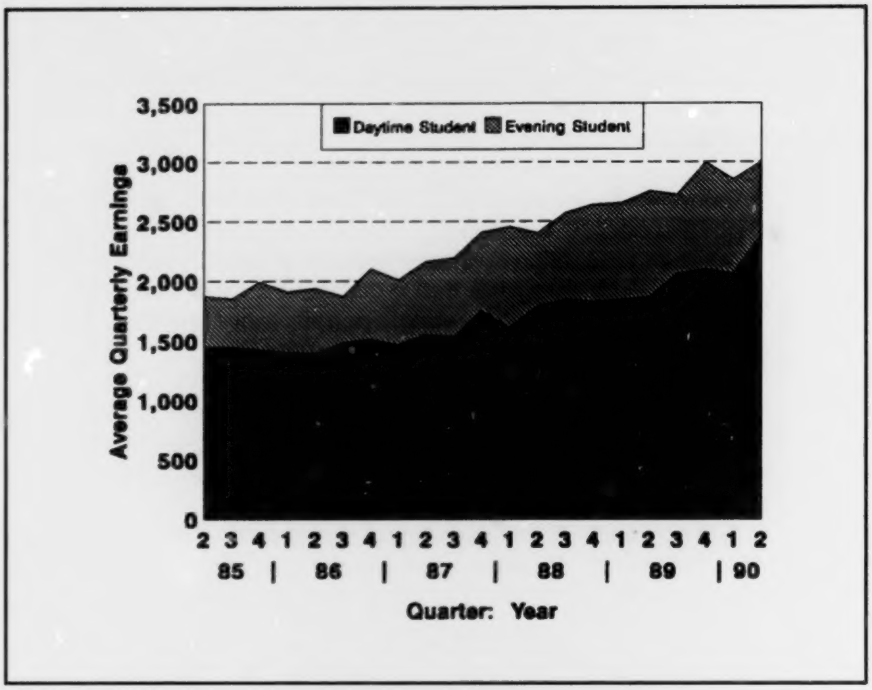


Figure 26. Average Quarterly Earnings by Time of Attendance (Daytime/Evening) for Office Specialist Program

For example, there might be greater use of adjunct faculty members for evening courses, which could translate into improved placement opportunities for students. Also, evening students are often considered by faculty as being more serious about an education because they come to class after working all day. Thus, different expectations of the two groups of students may come into play in this situation.

Reporting Differences

Three conclusions arise from the proceeding discussions on outcome measures related to institutions and programs:

1. Differences in reporting practices between public and private postsecondary institutions, and among states, make it difficult to conduct straightforward comparisons among these different reporting entities. This suggests that a common core of data elements should be proposed, which would permit more routine tabulations of information for "consumer rights" purposes.
2. The repeated cautionary statements should remind policymakers and practitioners that proper interpretation of long-term data may not be easy, particularly if funding and program continuity are affected.
3. Training and education for institutional managers and consumers will be necessary to assure the proper use of the information that will become available through existing data sources.

Student Characteristics and Outcomes

One of the most consistently heard concerns from school administrators on performance measurement is that no account is taken of differences in student demographics across schools and even among programs within institutions. This section indicates why these concerns should be heeded.

Gender

Figures 26 and 27 display the differences in employment and earnings outcomes for former male and female students from 1985 through 1990. Figure 26 shows only small differences in the employment rates of former male and female students.

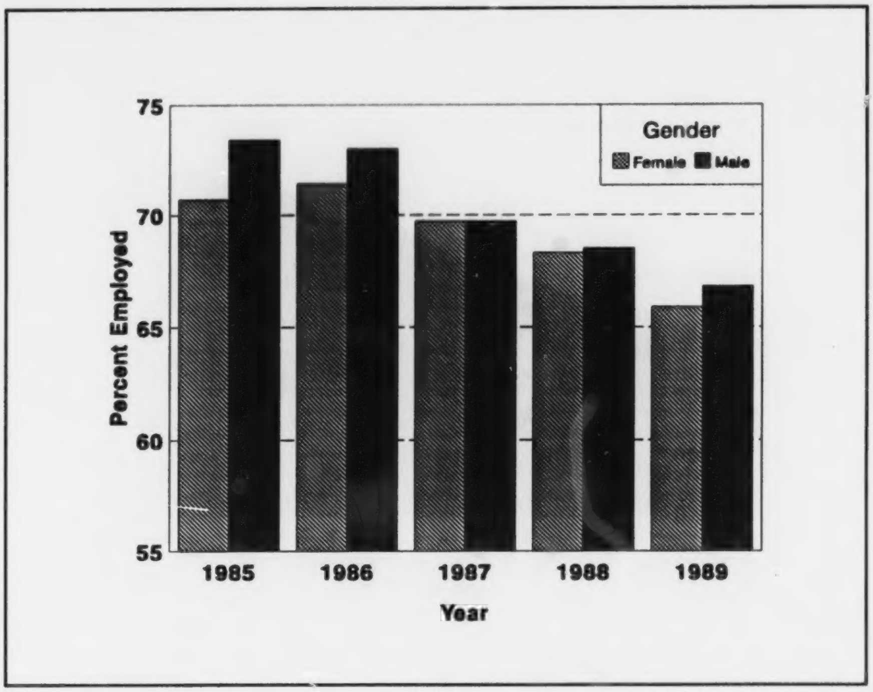


Figure 27. Employment Rate by Gender

Earnings differences between male and female students were much more dramatic. The earnings of women started at a much lower level and remained so through the five-year period shown in Figure 27. Thus, programs with higher numbers of female students may demonstrate lower earnings outcomes than programs with large percentages of male students.

One factor that may be influencing these differences in earning power is full- or part-time employment status. State UI wage data records reflect both full- and part-time employment earnings without distinction. Generally, in labor force data, women are found to work part-time more often than men; however, this could not be substantiated with the demonstration project data.

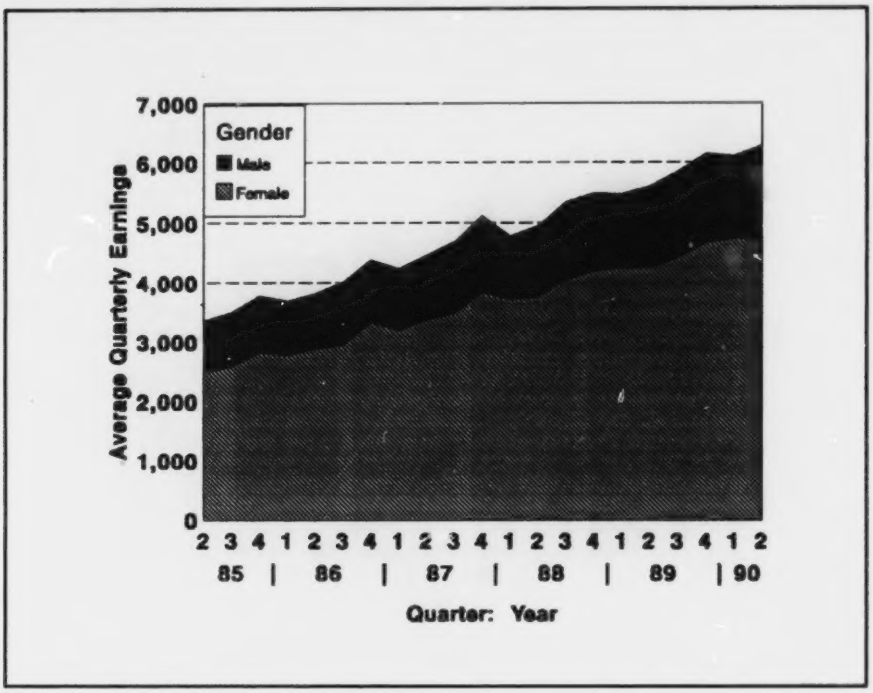


Figure 28. Average Quarterly Earnings by Gender

Interpretive Caution

Recall, in interpreting these figures, that both full- and part-time employment is reflected. One method of eliminating this ambiguity is to establish the equivalent of full-time full-quarter employment at the minimum wage as a threshold for inclusion in a presentation of this type. In the general workforce, women have a higher level of part-time employment than men. This fact may be influencing the earnings paths shown in Figure 28, but existing wage data sources cannot tell us whether employees are working full- or part-time.

Race/Ethnicity

Figures 29 and 30 track employment rates and average earnings growth for former black and white students. Figure 29 shows that **black students had lower documented employment rates than their white peers throughout the five-year period.** For instance, in 1985, two-thirds of the black students were employed, while three-fourths of the white students held jobs. Both groups were affected by the economic downturn in 1989, but the black students' employment rate fell further during this period than the employment rate of the white students.

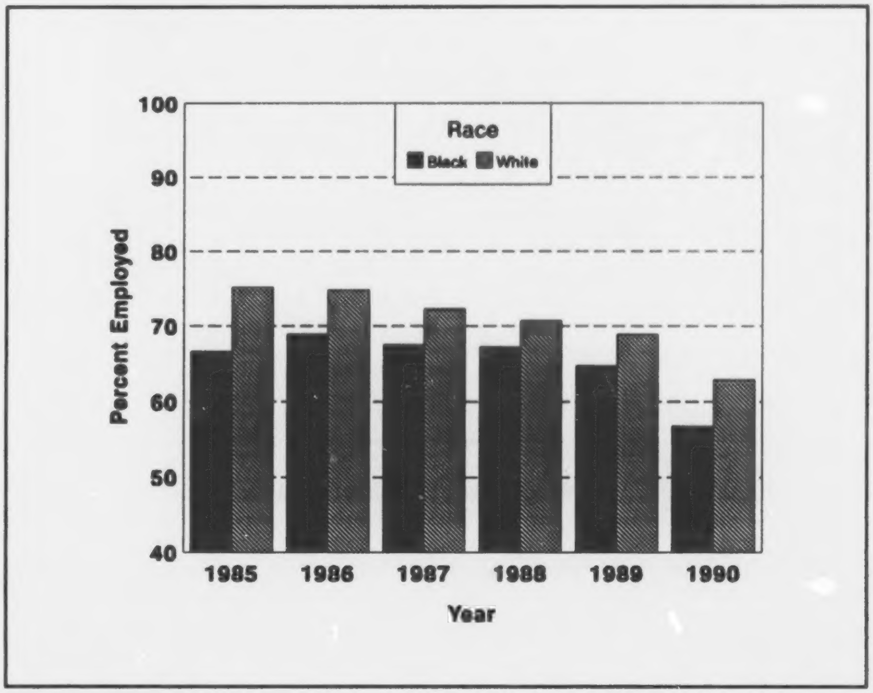


Figure 29. Employment Rate by Racial Group

The information, conveyed in Figure 29, raises three management-related questions about race and employment. These questions are:

(1) Is the difference between white and black students due to racial discrimination in the workplace?

(2) Is the difference due to where the former students went to college or what courses they took?

(3) Or, is the difference due to previous work history and educational exposure prior to entering postsecondary education?

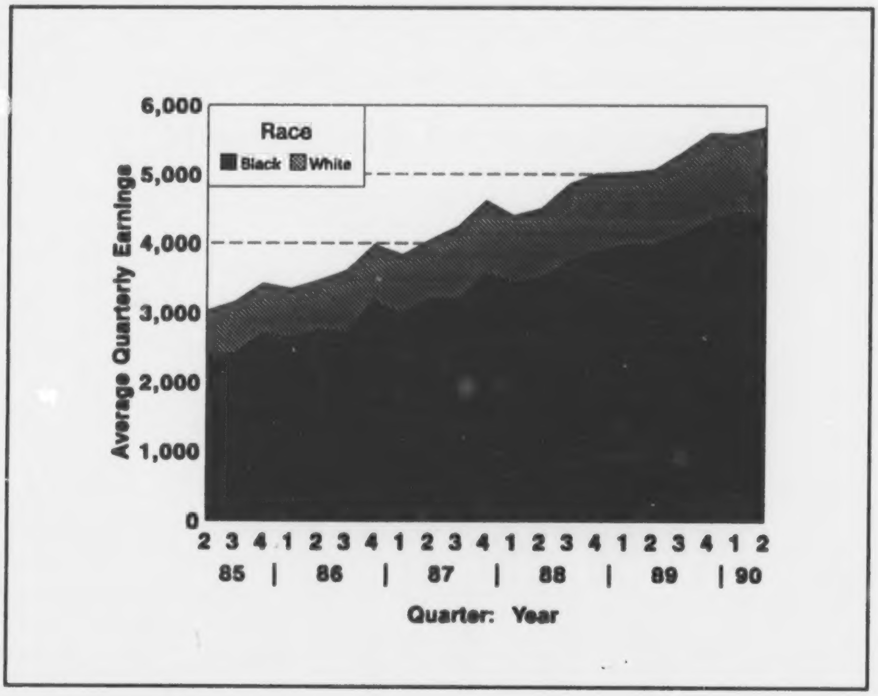


Figure 30. **Average Quarterly Earnings by Racial Group**

Figure 30 uses demonstration project data to document what has been shown many times in other settings. **The earnings of the black students failed to match the earnings level of their white peers at any time from 1985 to the second quarter of 1990.** The differences between the earnings of the two groups also increased over the period examined. The questions asked in the previous paragraph apply to earnings as well.

Finally, concluding the discussion of demographic factors, Figures 31 and 32 display age-related differences in documented employment and earnings of former students.

Age

Figure 31 shows that **older students (aged 35 plus) had lower employment rates than their younger classmates.** This fact suggests that both prior and concurrent employment information may help in addressing some related policy and management questions. For example:

- Did older students have lower employment rates because they were more likely to have been terminated from a prior job?
- Were these older students women who had been out of the labor force raising a family so that they had had little recent work experience or practice in job seeking?
- Were these older students mostly retirees who had decided to obtain training for a second career?

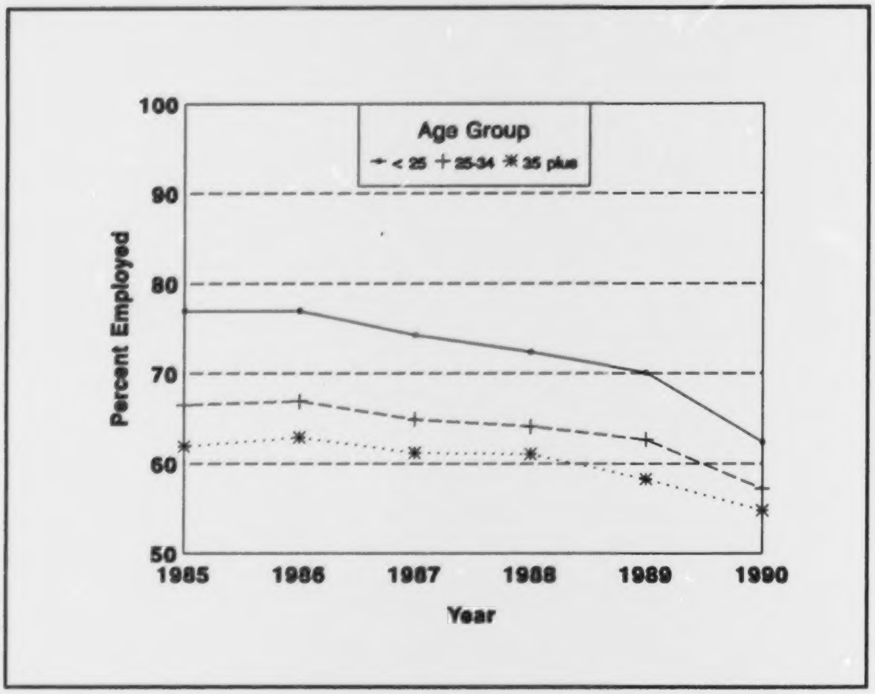


Figure 31. Employment Rate by Age at Time of Enrollment

These questions cannot be answered through existing wage data alone. However, sources such as counselors or instructors familar with students' backgrounds or surveys at the time students apply could provide supplemental information that might help clarify the factors affecting the relationship between age and employment rate. Institutional managers may need to ask questions about whether older students are receiving the help they need to find employment, or if age discrimination is a factor in the local labor market?

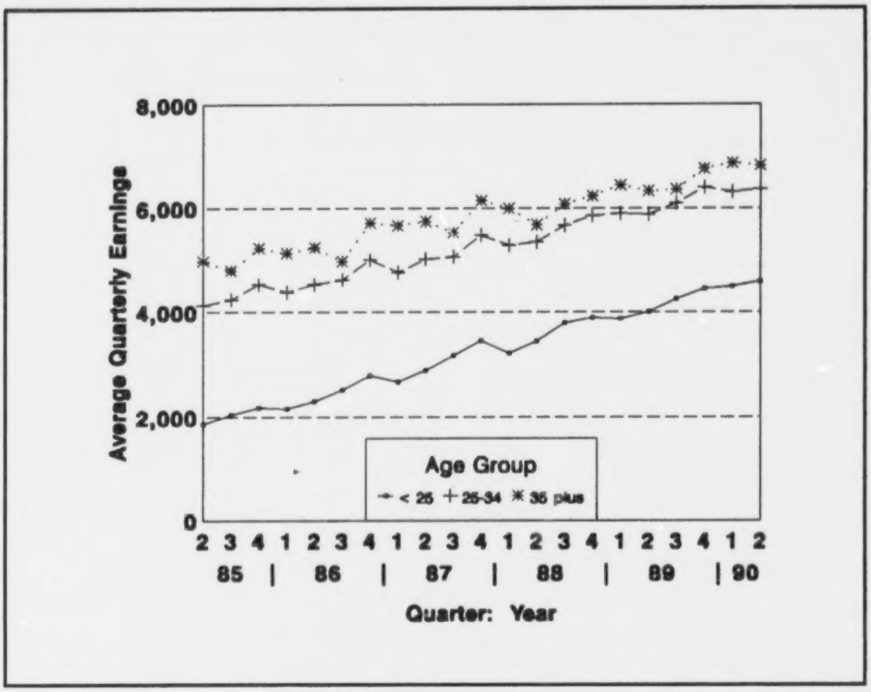


Figure 32. Average Quarterly Earnings by Age at Time of Enrollment

Figure 32 shows that **older students had higher average earnings than their younger classmates**. At no time during these five years did the earnings paths cross or diverge. Thus, those older former students who were employed receive higher earnings than younger students.

Together, Figures 27 through 32 emphasize the **importance of recognizing and taking into account demographic differences in student constituencies** when employment and earnings outcome measures are used for management and policy purposes. Policymakers and managers are encouraged to remember that **combinations** of these data elements must be considered in order to discover the **reliable** patterns influencing the employment and earnings of former students.

Outcomes and the Local Economy

Another concern often heard from school administrators is how unfair it is to blame the education community for the difficulties of the broader community when economic conditions weaken. The final illustrations of employment and earnings outcomes in this chapter address this concern.

Local Economic Factors

Figures 33 through 36 illustrate the influences of local economic conditions on employment and earnings outcomes. The basic format for each set of these presentations is the same. Figures 33 and 34 present data for former Business and Commerce Technology majors at several community colleges in one of the demonstration project states.

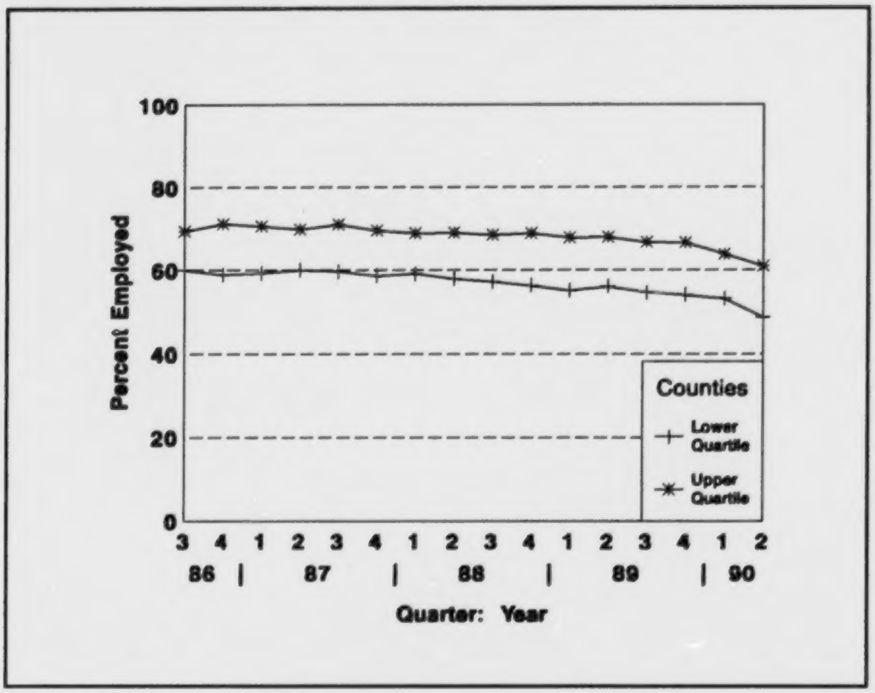


Figure 33. Employment Rates of 1984 Community College Business and Commercial Technology Enrollees by the Growth Level of the County in Which the College is Located

Figure 33 shows that low-growth counties consistently have less employment than high-growth counties. It also shows a downward pattern in the employment rate of former students beginning in the final quarters of 1989.

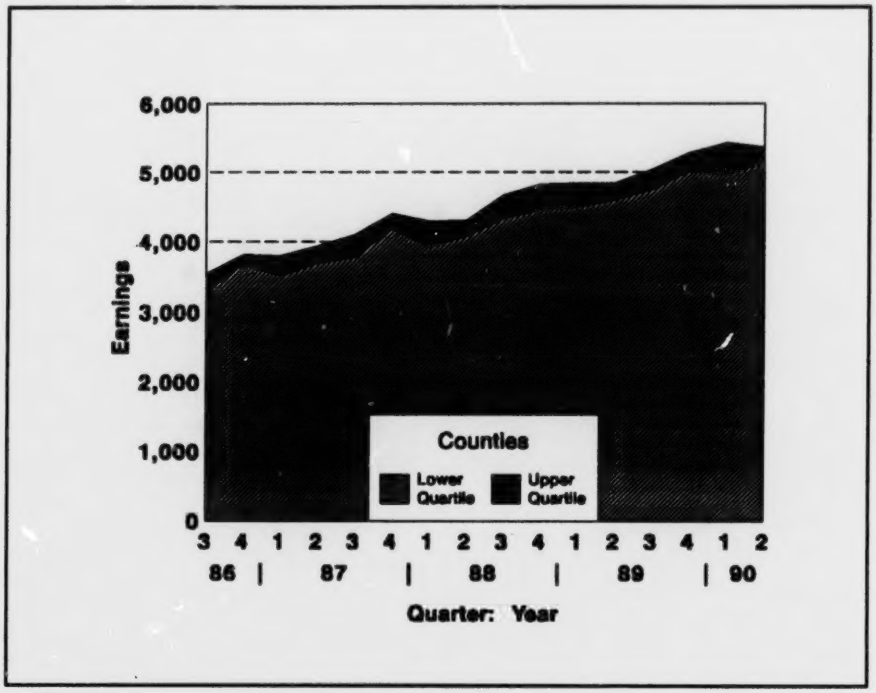


Figure 34. Earnings of 1984 Community College Business and Commercial Technology Enrollees by Growth Level of County in Which the College is Located

Figure 34 indicates steady increases in the average earnings levels for those former students who were employed. The data collected by the demonstration project suggest that the downturn of the economy may have affected the employment rates, but not the average earnings, of former students in counties of both high and low economic growth.

The demonstration project made a substantial effort to obtain and analyze measures of economic change that would reflect the actual conditions faced by former students as they sought to find and keep jobs. In an attempt to maximize the difference in local economic conditions, the home counties of the community colleges were arrayed along a continuum of economic strength--in this case measured by changes in building permit issuance--and the highest and lowest quartiles (i.e., leaving out the middle half of the distribution) were compared.

Figures 35 and 36 present data about former students in the same community colleges who were Health Services and Paramedical Technologies majors. The intent of these sets of figures is to relate documented employment rates and earnings paths over time to changes in local economic conditions.

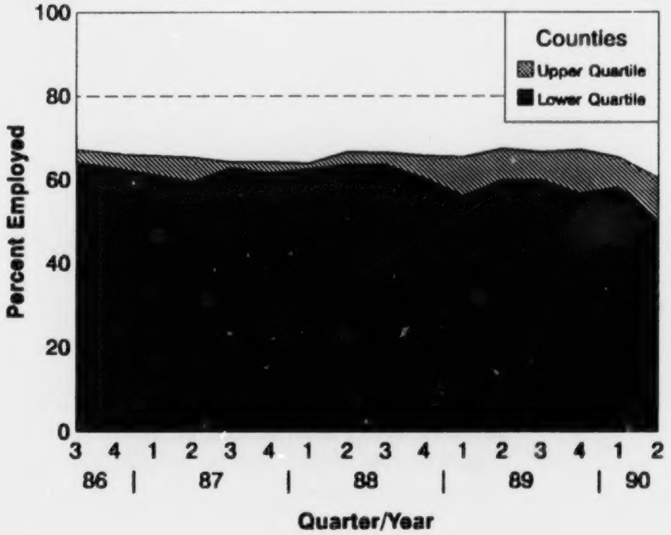


Figure 35. Employment of 1984 Community College Health Services and Paramedical Technology Enrollees by Growth Level of the County in Which the Community College Is Located

Figure 35 again shows that the weakening of the economy in 1989 and 1990 affected the employment rates of former students in health care occupations in both the high and low growth counties. However, Figure 36 shows that the average earnings of those who were employed increased substantially throughout the time period.

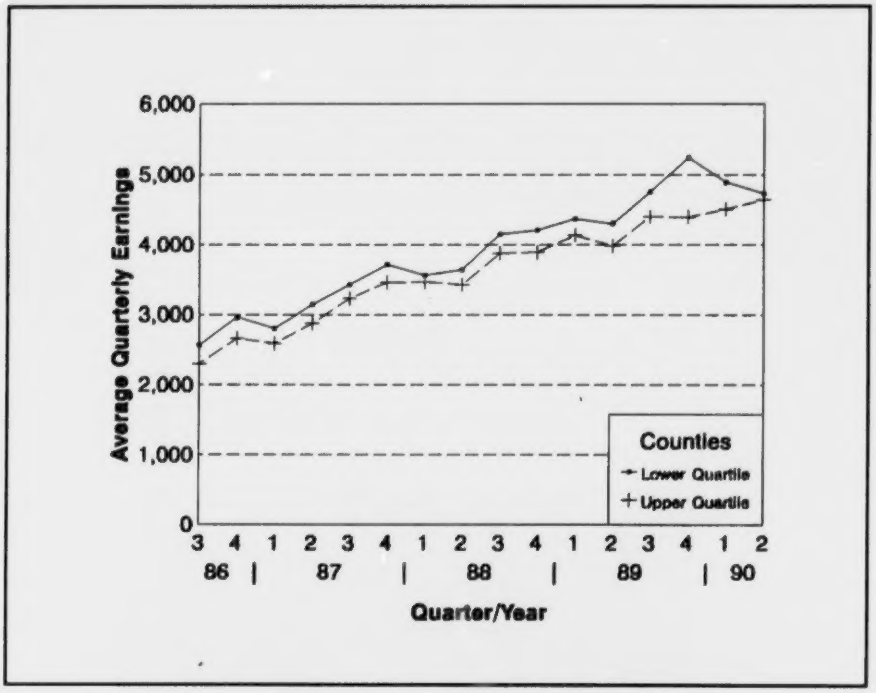


Figure 36. Earnings of 1984 Community College Health Services and Paramedical Technology Enrollees by Growth Level of the County in Which the Community College Is Located

More refined adjustments for economic conditions, and a broader range of such conditions, will be included in research that is already underway for the National Assessment of Vocational Education.

Summary

The figures that have been presented in **Chapter Five** combine a wide range of data elements obtained from individual schools, state higher education coordination authorities, State Employment Security Agencies, the U.S. Office of Personnel Management, and the U.S. Department of Defense. Particular data elements have been chosen for display based on their relevance in satisfying frequently encountered consumer requests for information. In this process, other high priority needs of individual readers have undoubtedly been overlooked. There is a growing need for a continuing dialogue about the capabilities of the longitudinal approach and the information needs of consumers.

The next section offers a list of the lessons learned during the demonstration project.

Lessons Learned

The demonstration project taught these important lessons about the data elements contained in institutional records, external factors, and diagnostic tools:

1. **Data Elements**

    - **There is little uniformity in the data elements that schools maintain about their students and the occupational preparatory programs in which they participate.** This limits the extent to which appropriate statistical techniques can be used to produce reliable estimates of the relationships between these data elements and postprogram outcomes.

    - **These differences can be reduced by encouraging voluntary cooperation in moving toward a core of uniform data elements that will permit more useful estimates to be produced.**[29]

2. **External Factors**

    - **Each SESA collects useful indicators of local economic conditions and changes in these conditions, which it uses for its own reporting purposes.**

    - **A SESA should be seen as an important partner in the design and day-to-day management of a performance measurement program.** The nature of this partnership will depend upon state statutes, regulations, and often, the ability of the staffs of different agencies to communicate with each other.

    - **The expertise and resources of the SESA should be used if they are offered, but substantial responsibility by the researcher will probably be necessary.**

3. **Diagnostic Tools**

    - **Treat statistical results as "working estimates" at all times.** Remain flexible in working with all parties involved to incorporate their ideas when it is feasible to do so.

    - **Use statistical estimates as a diagnostic tool, but do no rely upon them as a stand-alone justification for action.**

VI.

WHICH IS BETTER?
POINT-IN-TIME OUTCOMES VERSUS THE LONGITUDINAL PERSPECTIVE

Chapter Six discusses the strengths and weaknesses of documenting employment at a certain point in time and the long-term approach to employment outcomes. The ultimate choice will be driven by such considerations as timeliness of reporting, availability of occupational detail, coverage of outcomes other than in-state employment, and interest in the status of former students who are not found by using a particular approach.

Figures 37 through 43 illustrate why multiple sources of administrative records will often be desirable to satisfy particular "consumer rights" information needs. These figures represent actual data collected during the two-state demonstration project. Seven figures based on these data are presented in this chapter. These figures are intended to stimulate the curiosity of policymakers and practitioners about the availability, and substantive strengths and weaknesses, of the various data sources. Discussion of each data source is provided in **Chapter Seven** of this report.

Point-in-Time Employment

Traditional methods of collecting employment information about former students--including face-to-face exit or follow-up interviews, and mail or telephone surveys--often provide only a "snapshot" of this important postprogram outcome.

Figure 37 shows the employment rate for the former students in a specific occupational curriculum of community colleges in the two-state demonstration project. Four administrative record sources were used.

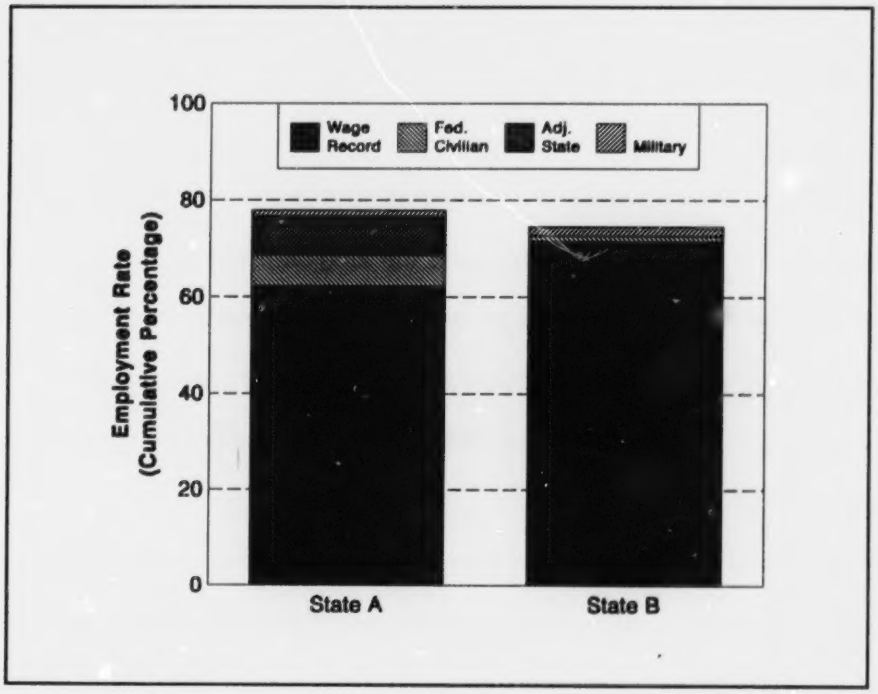


Figure 37. Cumulative Percentage of Employment by Source of Data for Two States

Figure 37 portrays the following information:

- **Using state UI wage data, 62.4 percent of the former students in State A were found to be working.**
- **In State B's UI wage data base, 71.5 percent of the former students from participating institutions were found to have documented employment.**
- **When other sources of data were collected for State A–state UI wage records from adjacent states, Office of Personnel Management for Federal civilian records, and military records from the Defense Department–an additional 15.5 percent of former students were found**

to be employed. These additional records brought the documented employment rate up to 77.9 percent.

- When additional data were included for State B, an additional 3 percent of the former students were located in these data bases; bringing the employment rate up to 75 percent.
- No UI wage data was sought from the states adjacent to State B so it is not known how many of the former students might be traveling across state lines to their employment site.

In Figure 37, the building blocks of each of the two state's employment rates are only an approximation of a "snapshot" of the former students' employment status at a particular point in time. This is mentioned for two reasons. First, the demonstration project's budget and time limits prohibited a precise matching of time coverage for each of the four administrative data sources--state UI wage records, UI wage records from adjacent states, U.S. Office of Personnel Management records, and U.S. Department of Defense personnel records. This lack of precision can be reduced when a longitudinal approach is routinely employed. Second, the reason for urging caution is that adjacent state information about former students' employment status was only sought for one of the two demonstration project states. For both of these reasons, Figure 37 should be viewed as an illustration of the importance of the building-block approach, not as a precise measurement of what will be found in any future replication of this approach in any one state.

Figure 37 reveals that **three out of every four of each of the two state's former students in a specific program in one community college were found two or more years later by querying four available data sources.** However, the relative importance of each of the data sources that contribute to these similar totals is quite different.

More is said about postprogram data collection in the Appendix, which points out that coverage decisions might differ depending upon whether the information will affect funding decisions, or curriculum approval/continuation decisions. **Steps Two and Three** in **Chapter Seven** should answer most questions about the timeliness, availability, accuracy, and cost of each data source discussed in this chapter.

Data Source Mix by Type of Institution

Many states, and the Federal government, are actively considering ways to improve the accountability of both public and private postsecondary providers of occupational education to prospective students. Figure 38 addresses this issue by illustrating that **employment outcomes for former students' can be documented for both public and private postsecondary institutions. However, the data sources in which former students' earnings show up may vary between the types of institutions within any given state.**

As can be seen from Figure 38, more students from community colleges were found in the state UI wage records than were former students of proprietary schools. Figure 38 displays data collected from participating proprietary schools and community colleges in one state.

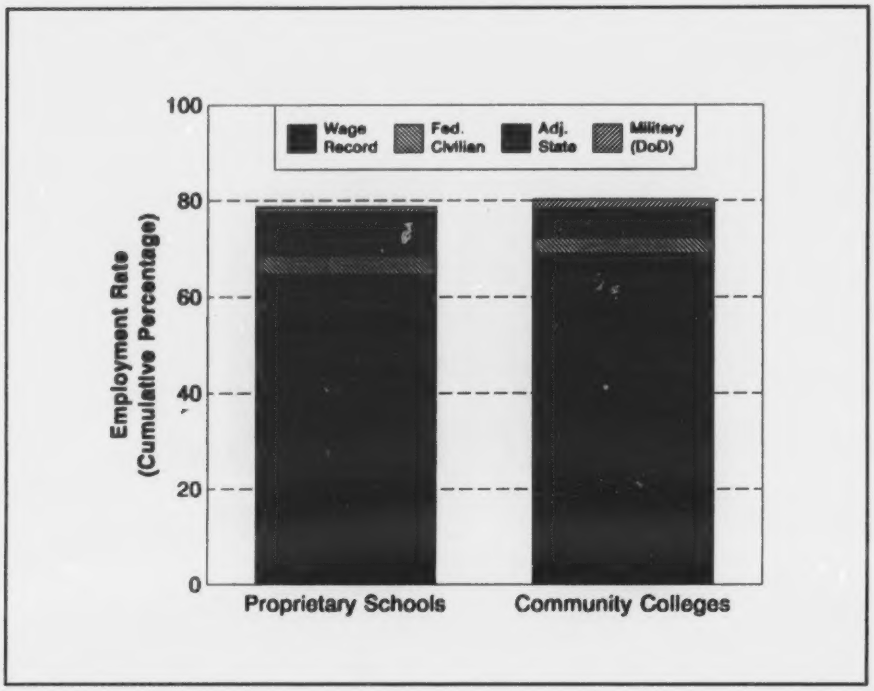


Figure 38. Cumulative Percentage of Employment by Source of Data by Type of Institution

Data Source Mix Across Institutions

Most consumers such as prospective students and their parents, and high school counselors want to know what the employment track record of former students has been for specific schools. Figure 39 illustrates how such requests for information might be met using the administrative data sources. The differences in the contribution of various data sources are revealed within the employment rates of former students in one occupational program in participating community colleges in one of the demonstration states.

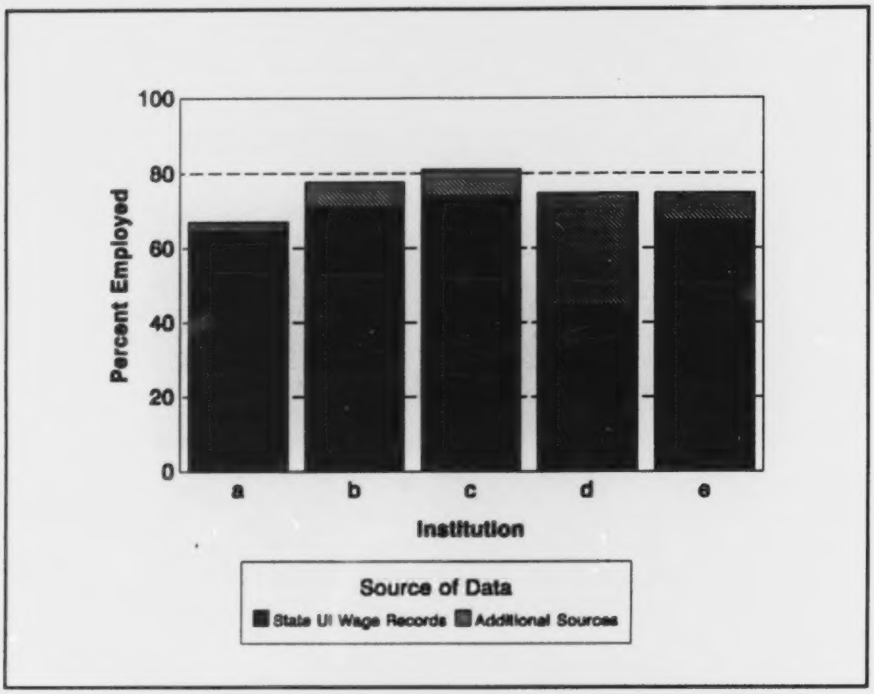


Figure 39. Cumulative Percentage of Employment by Institution

Figure 39 breaks out the total rate of employment for one state's former community college students from Figure 38 into college-specific sources of such documentation. The following was learned about the data sources:

- **In one state, 60 percent of the former students who were found in the state's own wage records five years after the students' initial enrollment had college-specific employment rates ranging from a low of 45 percent to a high of 74 percent, a 29 percentage point range.**
- **When all four administrative data sources are considered, this 29 percentage point range is more than halved, to only 14 percentage points, with a spread from a low of 67 percent to a high of 81 percent.**
- **The former students from various institutions are found in different proportions among the types of data sources.**

This last finding is not surprising, but it serves as a very visible warning flag that sole reliance on any one source of information must be treated with caution.

Summary

Two conclusions emerge from Figures 37, 38, and 39:

- **The overall similarity of employment rates between the two states, between public and private postsecondary institutions that offer occupational education, and among public community colleges, suggests that wider use of these administrative data sources is warranted.**
- **The relative importance of each data source varies across different units of analysis such as states, institutions, and types of institutions.**

The Longitudinal Perspective of Employment and Earnings

Figures 37, 38, and 39 focused on point-in-time or "snapshot" uses of the administrative data sources, which address certain types of consumer questions about former students' subsequent employment status. Figures 40 and 41 reflect a longitudinal perspective, which is designed to answer different types of questions about former students' employment and earnings.

Relationship of Certificate Completion to Employment and Earnings

Figure 40 traces employment rates over five years for two groups of former students from one postsecondary institution--those who received a certificate and those who were not awarded a certificate. A total of 322 former students enrolled at different times between January 1986 and May 1987. Their program of study lasted approximately seven months. Over three-fourths of the enrollees satisfactorily completed their program. Accurate records on the completion of a certificate or degree are essential for the conduct of this type of analysis.

The data show that those students who received a certificate had an employment rate higher than those students who did not receive a certificate for four out of the five years examined.

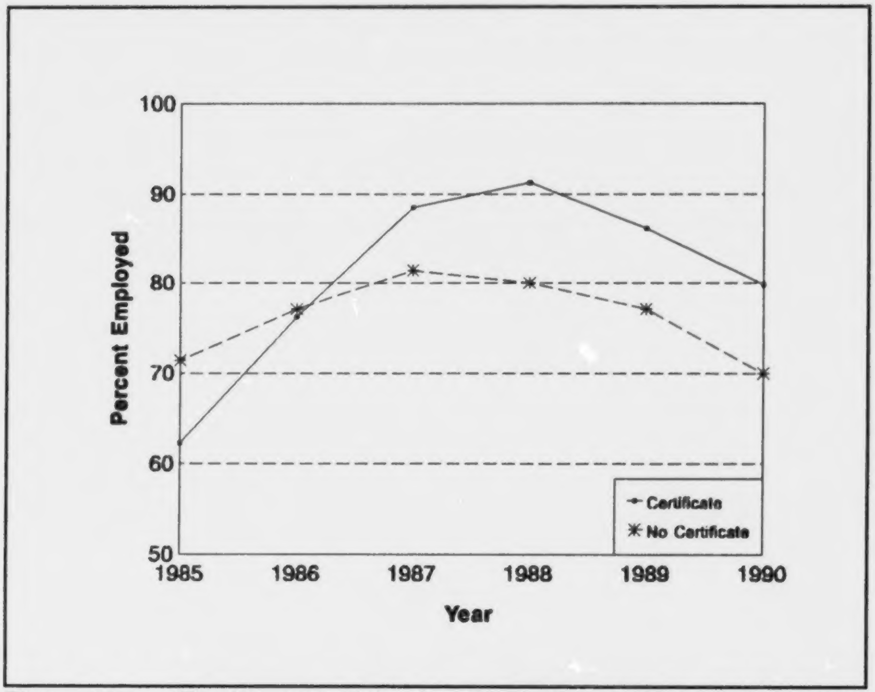


Figure 40. Employment Rate for Students of One Institution by Whether or Not They Received a Certificate

Earnings and Degrees

Figure 41 traces quarterly earnings levels for those former students who appear in one participating state's UI wage records. There is no distinction between full- and part-time employment in state UI data.

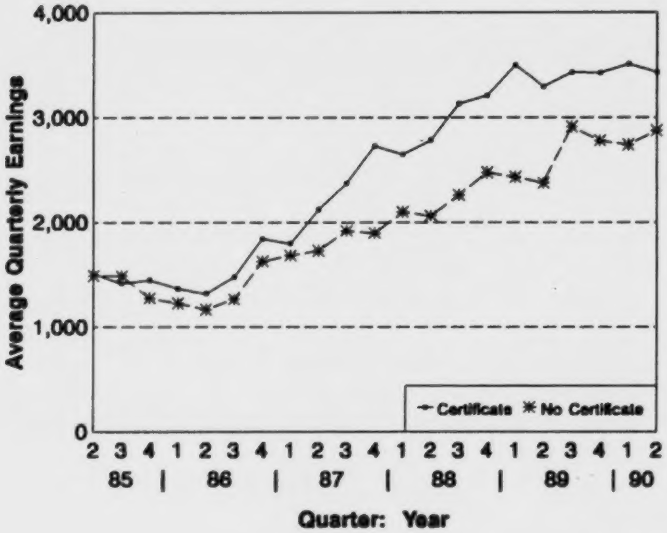


Figure 41. Average Quarterly Earnings for Students of One Institution by Whether or Not They Received a Certificate

In 1986, the average quarterly earnings of those students who had been awarded a certificate were slightly higher than their counterparts who had not received a certificate. The difference in earnings widened over time.

Relationship of Placement Status to Employment and Earnings

Figures 42 and 43 complete this comparison of data collected in the two-state demonstration project. Particularly at the secondary school level, vocational educators have a long-standing commitment to using placement information as a measure of postprogram accountability.

Figures 42 and 43 use a measure of placement that was included in one demonstration project school's records. They offer one more reason why a longitudinal perspective based on administrative records might be desirable--both documented employment rates and average earnings levels over time differ between those who had been reported as placed and those reported as not placed in the school's records. In this particular case, the "placement" data element only indicates that the school knew that a job had been found; not that the school's own placement efforts had discovered the employment opportunity.

Figure 42 reveals that those who are recorded as "placed" in the school's files have a higher level of documented employment over the next five years, when compared to those who are not reported as placed in the school's records. In Figure 42, the 1985 pre-program completion "snapshot" reveals an identical documented employment level of 64 percent for both the placed and not placed groups of former students. But, if the population of those who were reported as placed then becomes the basis for subsequent follow-up efforts initiated by a school, a distorted understanding of longer-term employment will emerge. The longitudinal approach is not affected by this source of bias.

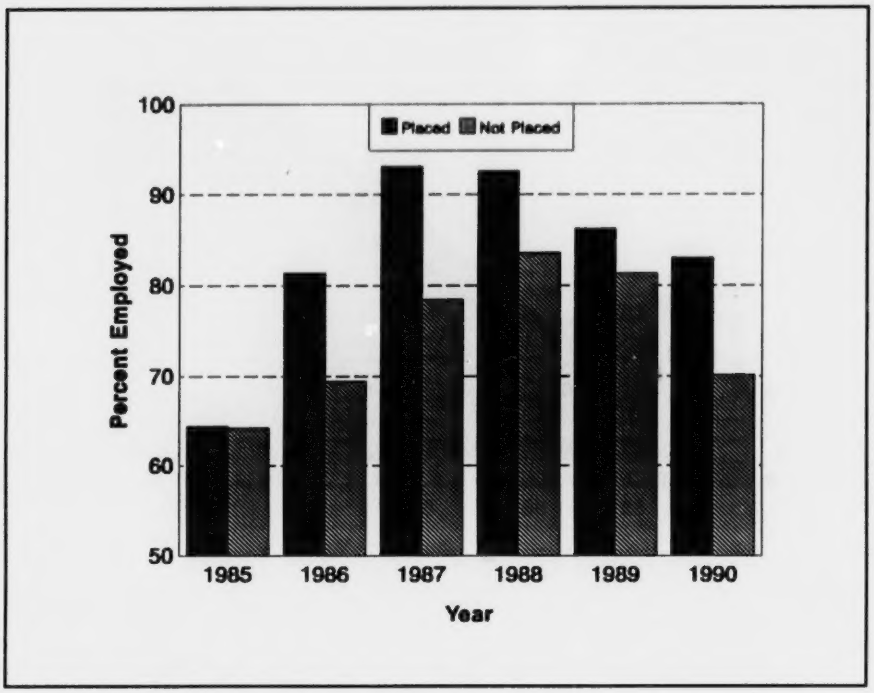


Figure 42. **Employment Rate for Students of One Institution by Whether or Not They Were Placed in a Job**

Figure 43 makes the same point, but this time from a longitudinal earnings perspective. Again, the initial pre-program completion period's "snapshot" of average quarterly earnings does not reveal much difference between the placed and not placed groups. But over time, the average earnings of the two groups diverge.

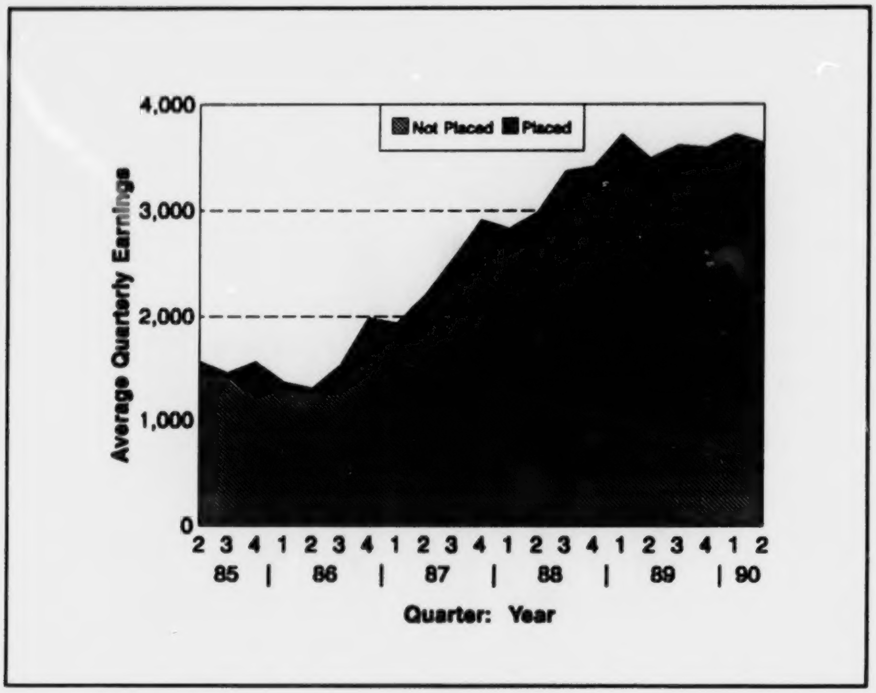


Figure 43. Average Quarterly Earnings for Students of One Institution by Whether or Not They Were Placed

Figures 42 and 43 address a policy issue that is of immediate importance. The Carl D. Perkins Vocational and Applied Technology Act of 1990 requires serious consideration at the Federal, state, and institutional levels about how former students' subsequent employment status should be documented to assure timely and accurate performance accountability. **Figures 42 and 43 provide evidence that a school's use of reported placement as a basis for subsequent follow up can produce an overstatement of both employment outcomes and average earnings growth to what will be found if both placed and not placed former students are contacted.**

A Profile of the Strengths of the Longitudinal Approach

Figures 37 through 43, and the accompanying text, provide practitioners and program analysts with an incentive to continue through **Chapter Seven** as required background before initiating action in determining what method to use to document employment outcomes for postsecondary vocational education students. No one should endorse or reject the longitudinal approach to advancing the understanding of former students' employment and earnings without an overview of the actual content of the each administrative data source which is provided in the following chapter.

In summary, the strengths of the longitudinal approach include:

- The longitudinal approach, which combines school-based information about former students with subsequent employment and earnings information about the same group, allows for in-depth inquiries based on preliminary results.
- The longitudinal approach is ideally suited for multivariate analysis that is necessary to discover reliable predictors of employment and earnings differences.
- Longitudinal data can be used to measure the susceptibility of former students to fluctuations in employment opportunities in the local economy.
- Longitudinal data provide a true "accounting" of former students including students recorded as placed and nonplaced in school records.

VII.

FIVE STEPS FOR STATE IMPLEMENTATION

Introduction

Chapter Seven provides five steps for state implementation for linking student information with existing wage data bases. Through interagency agreements, a cooperative effort can be forged for determining employment and earnings outcomes for former postsecondary vocational education students. This description of a step-by-step process will be helpful to practitioners, program analysts, and educators who have had little experience in working with certain key agencies and in using existing wage data records.

This study examined a way to reduce the cost of data collection by using existing state and Federal administrative data sources, while improving the ability to monitor employment and earnings information over time. **Chapter Seven** shows how to reduce costs and improve the quality of the outcomes information by using these existing sources of data. Additionally, this approach will relieve teachers and administrators within the vocational education system of the burden of collecting follow-up information.

Chapter Seven also details what was learned during the demonstration project about the use and limitations of existing administrative data sources. Here, the term "administrative data" covers any employment and earnings information that is already collected for a purpose **other** than for follow-up purposes for former students. Four existing data bases warrant serious attention as sources of employment and earnings information:

1. State Employment Security Agency Unemployment Insurance (UI) wage records;
2. U.S. Office of Personnel Management Federal civilian employee records;
3. U.S. Department of Defense military enlistment records; and
4. U.S. Postal Service employee records.

Two other possible administrative sources of employment and earnings data--the Social Security Administration and the Internal Revenue Service--are also addressed in **Chapter Seven.**

Chapter Seven offers useful tips and techniques for collecting, processing, and analyzing existing wage data. Other approaches such as telephone and mail surveys of former students can be used to collect other types of postprogram information that will **supplement** state UI wage and other data sources. For example, Florida's Education and Training Placement Information Program combines employment and earnings information obtained from Florida's Department of Labor and Employment Security with occupational details collected through a survey instrument that is mailed directly to selected employers of former students. Program staff can then follow up with a telephone contact when necessary.[30]

Some interesting information not found in existing administrative files include:

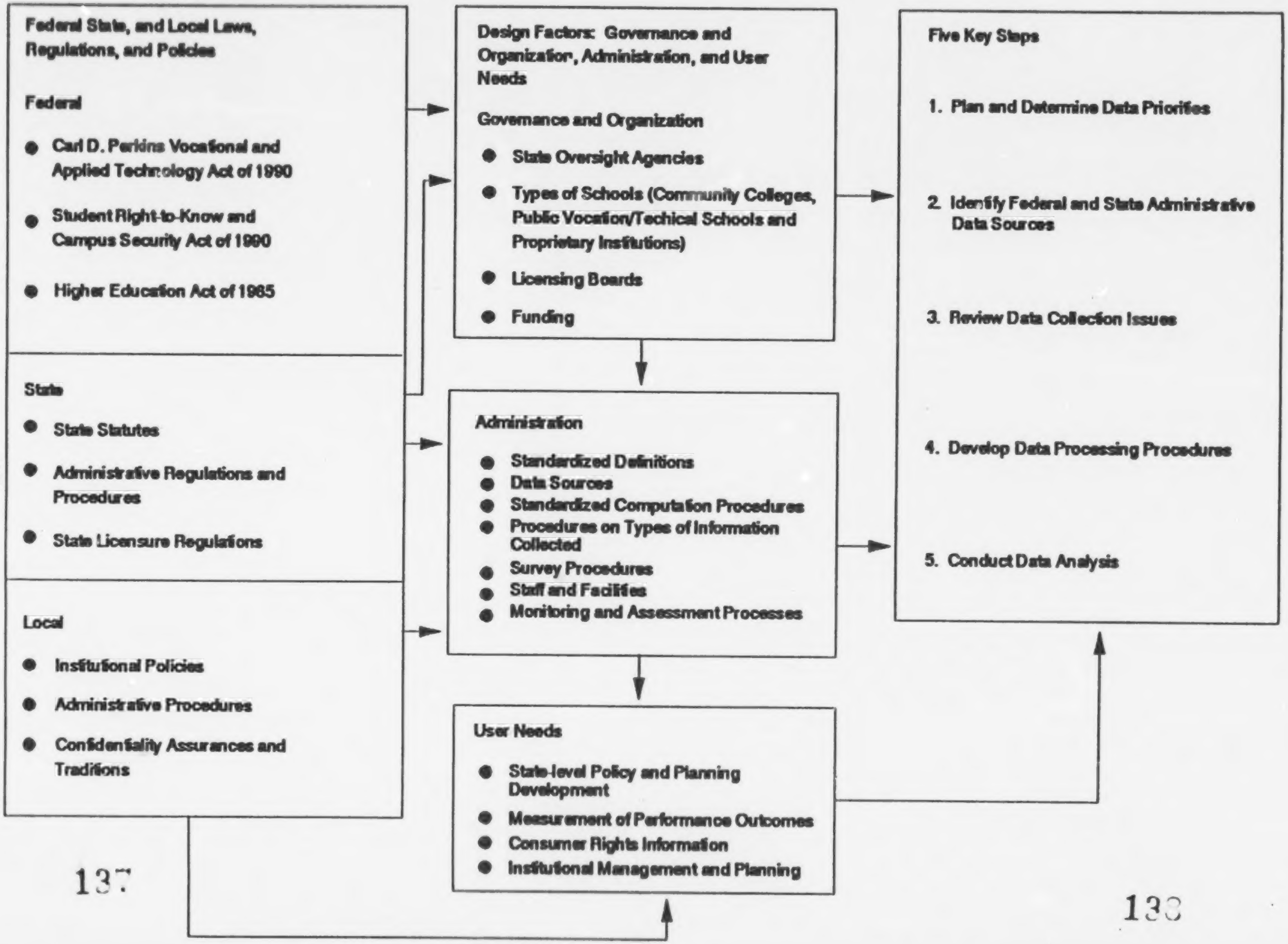
- occupational details such as years of experience;
- position classification;
- non-wage benefit coverage;
- promotion patterns;

- employer opinions about the specific strengths and weaknesses of new hires; and
- former students' opinions about their educational experience.

Decisions about the importance of these other postprogram outcomes should not affect inquiries about the feasibility of obtaining reliable employment and earnings information from existing data sources.

Chapter Seven also provides a conceptual framework to show all the different pieces of the puzzle that policymakers, educators, and practitioners in a state must be aware of as state implementation for record linkage progresses. Table 4 displays this framework.

TABLE 4
Conceptual Framework for State Implementation



Federal State, and Local Laws, Regulations, and Policies

Federal

- Carl D. Perkins Vocational and Applied Technology Act of 1990
- Student Right-to-Know and Campus Security Act of 1990
- Higher Education Act of 1965

State

- State Statutes
- Administrative Regulations and Procedures
- State Licensure Regulations

Local

- Institutional Policies
- Administrative Procedures
- Confidentiality Assurances and Traditions

Design Factors: Governance and Organization, Administration, and User Needs

Governance and Organization

- State Oversight Agencies
- Types of Schools (Community Colleges, Public Vocation/Techical Schools and Proprietary Institutions)
- Licensing Boards
- Funding

Administration

- Standardized Definitions
- Data Sources
- Standardized Computation Procedures
- Procedures on Types of Information Collected
- Survey Procedures
- Staff and Facilities
- Monitoring and Assessment Processes

User Needs

- State-level Policy and Planning Development
- Measurement of Performance Outcomes
- Consumer Rights Information
- Institutional Management and Planning

Five Key Steps

1. Plan and Determine Data Priorities
2. Identify Federal and State Administrative Data Sources
3. Review Data Collection Issues
4. Develop Data Processing Procedures
5. Conduct Data Analysis

Conceptual Framework for State Implementation

A conceptual framework helps practitioners, program analysts, and policymakers to see the many factors that impact on implementation of record linkage. These include:

- Federal, state, and local laws, regulations and policies;
- Governance, organizational, and administrative factors; and
- User needs such as "consumer rights" information, measurement of performance outcomes, policy planning and development, and institutional planning and management.

Federal, State, and Local Laws and Regulations

Chapter Two discussed several key Federal laws that brought about the interest in record linkage. These were: the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, the reauthorization of the Higher Education Act of 1965, and the Deficit Reduction Act of 1984. These laws brought to the forefront the need for various kinds of information on vocational education to measure program performance and to provide prospective students with answers to questions on the potential benefits of different occupational training programs. The Deficit Reduction Act initiated the use of state UI wage data to verify income and eligibility for selected Federal benefit programs.

State legislation also may require the assessment of the performance of vocational programs delivered by publicly funded educational institutions. For example, the Florida legislature enacted the Vocational Placement Standard Law in 1984, which required that funding of all public vocational education be performance based.[31] A specified placement rate must be achieved by programs in order to retain state funding. In general, the statute requires all public schools providing vocational programs to report annually to the state on enrollments, completions, and training-related placements. Continued availability of employer wage reports for assessing the performance of vocational programs is a requirement of this Act. It also provides specific rules regarding confidentiality of records. Florida's Education and Training Placement Information Program uses state UI wage data along with information provided by institutions to determine the performance of all publicly funded vocational programs in the state.

A review of the trends in state policy found that the pace of change is quickening, especially for policies on the collection of performance data on education programs. So, it is essential that state statutes and regulations be reviewed for their applicability to record linkage. Also, knowledge of local institutional traditions and procedures to protect student confidentiality is helpful.

Governance and Organization

From a state survey conducted by Research and Evaluation Associates in 1990, it was found that there is no typical state agency with responsibility for vocational education.[32] Governance of secondary and postsecondary vocational education is commonly divided among a variety of state agencies. Within the postsecondary sector, there may be different agencies responsible for programs offered through vocational-technical institutes and community colleges. Almost always, proprietary schools are overseen through separate state entities, and frequently, by multiple licensing boards corresponding to different occupational areas.

Governance comes into play in record linkage because the involvement of numerous agencies limits the ability of states to develop comprehensive policies that apply equally to all institutions, public and private, offering postsecondary vocational training. Only eight states administer all three components of postsecondary vocational education (e.g., community colleges, vocational/technical institutes, and proprietary schools) through a single state agency.[33] Moreover, to the extent that state policies exist, the most ambitious efforts in data collection have been undertaken in the public sector.

In conclusion, the number of state agencies and local organizations involved in providing vocational education will affect state-level implementation of record linkage.

Administration

The state survey, conducted before the demonstration project began, identified several issues concerning the lack of standardized definitions in data collection on education program outcomes.[34] Most states collect some information about program outcomes, with the most frequently collected outcome measure being the number of students who complete a training program. Whether program completers are placed in jobs is collected by 33 states for public schools and 21 states for proprietary schools. Most states have developed a standardized definition for a program completer. The most common definition used is:

> An individual who completes all program requirements and is awarded a degree, diploma, or certificate.

However, in many states, information is only collected on recipients of associate degrees from public institutions.

Even fewer states have standardized definitions for measuring job placement, and all of these states limit data collection on placement to program completers. The computation of a completion or placement rate requires at least two components:

1. A definition of a completer or a job placement;
2. Agreement on the base to which the number of completers or placements is to be compared.

The survey responses showed that establishing a base number for completion and placement rates and obtaining appropriate data appear to be areas in which states are experiencing difficulty. Presently, only about half of the states compute placement rates. The primary difficulty is in determining which categories of unemployed persons to exclude from the calculation (e.g., those not seeking employment, or who do not use the school's placement service). Another area of concern is how to get information on the number of former students who are self-employed or have started their own small businesses.

During the past two years, state policies on outcome measurement have rapidly changed regarding assessment of student outcomes. In implementing a statewide accountability system on postprogram outcomes, it becomes important to have established standardized definitions for key performance indicators so that information being given to consumers and oversight agencies is consistent, especially if these measures are used in making funding decisions.

User Needs

Chapter Three discussed some of the information needs of prospective students, policymakers, and institutional managers about the employment and earnings outcomes for former students. While the needs of these groups may be slightly different in each state, a review of **Chapter Three** will be useful before reading the information provided in each of the sections on the five steps. Also, refer to the Appendix for a discussion of outcome measures versus performance standards.

Overview of the Five Steps

Chapter Seven includes the following **five steps** for state implementation:

Step 1. **Plan and Determine Data Priorities;**

Step 2. **Identify State and Federal Administrative Data Sources;**

Step 3. **Make Data Collection Decisions;**

Step 4. **Develop Data Processing Procedures; and**

Step 5. **Conduct Data Analysis.**

Each step discusses information on the topic, gives strategies for accomplishing key tasks, and provides tips on pitfalls to avoid. Whether a state is "starting from scratch," or refining or modifying a current postprogram information system, the following five steps offer help and guidance on:

- the many nuances of the data sources;
- possible solutions to problems that may arise; and
- benefits to prospective students, policymakers, and educators of this cost-effective method.

Step 1 on the planning process follows.

Step 1.

PLAN AND DETERMINE DATA PRIORITIES

Step 1 discusses key factors that must be considered in planning for state implementation of record linkage. Suggestions are given on how to start working with the State Employment Security Agency (SESA) and on preparing an interagency agreement for formally establishing a relationship with the SESA for record linkage.

Start With a Few Key Agencies

The two-state demonstration project undertaken involved the acquisition and consolidation of 22 data sources. These were acquired from private career schools, community colleges, a State Higher Education Coordinating Board, the U.S. Office of Personnel Management, the U.S. Department of Defense, and five State Employment Security Agencies. There were many differences in the data element content and in school-based records as well as employment and earnings records. But, it is not recommended to start off with such a large number of different data sources.

Florida's Education and Training Placement Information Program has cautiously expanded the number of Federal, state and local data sources that they handle. With the demonstration project and Florida, the project managers had many years of experience learning about and working with the agencies that collect these existing wage records, and about the peculiarities of each data source.

It is advisable for staff of those states "starting from scratch" to establish a solid foundation of trust with a few key agencies before expanding to a more ambitious juggling of multiple interagency agreements and data sources. Trust with each agency can build through responsible action and learning about the agency's priorities and procedures. Some examples of how to start working with SESAs are given below.

Before approaching a SESA, it is important to obtain and become familiar with the current confidentiality provisions of the Federal and state statutes that the SESA will use to reach a decision on a request for access to state UI wage records. This familiarity will serve two quite different purposes:

- It will demonstrate to the SESA the requester's seriousness of purpose and professionalism.
- It will protect both parties from haggling over issues that could, and should, have been dealt with before an initial request is even submitted.

One important fact that will emerge from a review of the SESA's statutory and regulatory requirements is that any administrative records that are provided in response to a request from an external party will remain the **property of the SESA**. Specific requirements will be included in any agreement to transmit data that spell out how the data are to be stored, and when and how the records are to be destroyed or returned to the SESA (without retaining unauthorized copies). Another important aspect of this retention of ownership is that any modification of intended use of the data must be agreed to in writing **ahead** of time. According to the U.S. Department of Labor's proposed regulations in the March 23, 1992 issue of the Federal Register, a violation of this provision is cause for revoking an agreement and immediately relinquishing the data to the SESA.[35]

was conducted. Redisclosure by the organization receiving the information is subject to the same restrictions under FERPA as the original disclosure.

Review State Statutes Regarding Confidentiality and Data Security

First, determine whether a former student's social security number can be legally used within the state to link school and state UI wage records. Legal counsel should be involved at this early stage for two reasons:

- It is important to accumulate a paper-trail of consistent legal interpretations.
- It will save time later in the process if there is an informed legal staff person who understands the content and context of an interagency agreement with the SESA.

There may be state laws or administrative regulations that prohibit the use of a social security number as a personal identifier on administrative records, or that restrict the use of such an identifier in performing record linkage. A state prohibition against the use of a former student's social security number need not be a cause for despair. There are practical approaches that may be available to handle such potential barriers. For example, it might be permissible to establish a unique proxy identifier that serves the immediate need without revealing the social security number of the former student.[38] This is usually known as a "dummy" code, which is retained in a secure buffer file, so no unauthorized person can obtain the original social security number.

Note that for "dummy" identifiers, a simple scrambling algorithm will **not** offer the level of security that is required because the scrambling system might be

Learn and Respect Compliance Requirements

The consolidation process that will be described in the five steps in **Chapter Six** only involves linking selected data elements from two or more data bases through a common data element--in this case, a former student's social security number and/or an employer identification number--with no direct or indirect effect on a specific individual's rights, benefits, or privileges.[36] Under no circumstance should research or program evaluation data requests be mixed with those that target specific individuals for sanctions or other actions that would affect their personal rights, benefits, or privileges.[37]

Moreover, an educational agency or institution's disclosure of a student's social security number to obtain further information to evaluate and improve its instructional program would constitute disclosure of personally identifiable information and would be subject to the requirements of the Family Educational Rights and Privacy Act (FERPA) if the educational agency or institution were receiving funds under a covered educational grant program such as the Carl D. Perkins Vocational and Applied Technology Education Act. However, if the disclosure is made to an organization conducting studies for, or on behalf of, the educational agency or institution, the educational agency or institution may disclose personally identifiable information from an education record of a student without the otherwise required prior consent. However, the agency or institution may only disclose information if the study is conducted in a manner that does not permit personal identification of parents and students by individuals other than representatives of the organization and the information is destroyed when no longer needed for the purposes for which the study deciphered. Also, note that the buffer file must be retained if there is a possibility that a future update of the linked records may be requested.[39]

In the event that a current state law represents a true barrier to immediate action, there is still an approach that might be worthwhile. A start might be to circulate an issue paper among officials in the executive or legislative branches of state government to determine if there is sufficient interest to pursue an executive or legislative remedy.[40] It is likely that there will not be an immediate active interest. Instead, it may be necessary to inform key parties about successful related activities in other states. The endnotes to this report should prove useful in undertaking this task.

Support might also be promoted through carefully selected examples of how the desired data can be used to save money and improve management effectiveness without compromising confidentiality of former students nor organizational rights and privileges.

Plan Interagency Agreement with State Employment Security Agency (SESA)

If record linkage using a former student's social security number is a permissible activity in the state, then an agreement will need to be negotiated with the SESA. The agreement will need to incorporate the requirements that arise from what is commonly known as the Buckley Amendments.[41] These provisions will stipulate that the recipient of the individual student records (whether obtained on paper or electronic media) understands the requirements of the Buckley Amendments regarding the confidential nature of student records--including conditions, prohibitions, and penalties associated with identity disclosure.[42]

It is recommended that the agreement follow the requirements in the U.S. Department of Labor's proposed regulations. In particular, attention should be paid to Section 603.14, which appears on page 10081 of the Federal Register issued on March 23, 1992.

As suggested above, legal counsel should be involved at the beginning so there are no surprises midway through the negotiation of an agreement. Each agency can be expected to have "boiler plate" sections that serve as uniform templates for many types of agreement. There also may be state- and agency-specific assurances and certifications that must be included.

The following generic sections of a typical agreement[43] are highlighted:

Introduction

- An introductory section identifies the agencies involved in the agreement.
- It establishes that each agency has certain data that, when combined, promise to advance a specific purpose as in this case, to provide information that improves consumer and management understanding of selected outcomes of vocational education programs.

Purpose and Justification

- If there is a statutory basis for the proposed record linkage, then cite it in this section. This may be a state law that requires accountability for vocational education, such as in Florida. If the effort relates to the accountability requirements of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, then this Act should be named.
- Regardless of the statutory basis, this section of the agreement should elaborate on the overall purpose stated in the introductory section. It should indicate how the purpose will be met. For example: ". . .by generating aggregated statistics that will be used in describing the employment experiences of students after participating in a vocational education program."

- It may be desirable to include statements that relate to the cost-effectiveness of collecting data by record linkage, rather than by traditional means.

Implementation and Record Exchange

- This section will include information that outlines how the record linkage will actually be initiated. For example, the agreement might state that the SESA will be contacted in advance to inform them about the expected volume of student records and anticipated date of the submission.

- An explicit statement should outline how the data are to be exchanged, such as by providing computer tapes or cartridges, or by accessing electronic files.

- A statement should be included that indicates exactly what data will be provided by the agency desiring the record linkage and what data elements will be added by the SESA.

Security, Confidentiality, and Public Release

- A section that acknowledges the applicable state and Federal laws concerning the confidentiality of student records, as well as restrictions on the use of the state UI wage records must be included. The U.S. Department of Labor's proposed regulations should be used for guidance in this regard.

- Language should be included that stipulates that the SESA will not duplicate any information from the student record file. One way to assure this is to only provide the SESA with each former student's social security number.

- A requirement should be included that when the job is complete, duplicate tapes or files will be disposed of or purged.

- Security arrangements while the data are in the possession of each party should be spelled out.

- If there are requirements that stipulate thresholds of aggregation for the release of data resulting from individually identifiable data, then these should be included in this section.

Additional Information

- Other sections will define the following terms:
  - * duration of the agreement;
  - * whether and how it may be renewed;
  - * conditions of termination;
  - * sanctions; and
  - * provision for the reimbursement of costs.

One of the reasons the U.S. Department of Labor has published proposed regulations to control the release of confidential records is that a multiplicity of uses is tempting once the data has been acquired. The data can be used to respond to increasing demands for consumer information that are one key focus of this report, and/or the data can by drawn upon for performance measurement and program accountability. Practitioners are urged to resist the temptation to seek multiple-purpose access to state UI wage records. An unblemished record of responsible use of these administrative data needs to be built. One intentional or unintentional act of noncompliance with state and Federal rules may have irreversible consequences, and even national repercussions.[44]

Determine Priorities for Data Collection

It is important for states to determine what the priorities are among the many data elements that can be collected. As mentioned earlier, the **essential** data element from school records is the social security number of the former student. This is the identifier that will link school records to state UI wage data and other administrative data sources. If the social security number can be legally used in the state for record linkage, then decisions about data collection and analysis are on the agenda.

Refer back to **Chapter Three** for some typical questions on which the various user groups--consumers, policymakers and institutional managers--may want to focus.

Prioritize the questions, but remember many of the same data elements can be utilized to answer questions of interest to different groups. The types of analyses that a state wishes to conduct will also determine data priorities.

For example, to relate employment and earnings outcomes to student demographics, the following data elements are needed from institutional records: sex, race/ethnicity, date of birth, and marital status, if available. Some other interesting data elements include:

- family financial status at enrollment;
- single-parent status;
- limited English language proficiency;
- disability;
- need for remedial services; and
- veteran status.

All of these would contribute to a richer understanding of factors beyond mere curriculum exposure that may influence postprogram outcomes.

To compare outcomes among programs within an institution or among institutions within a state, the following data elements from institutional records are useful:

- prior education of student at admission;
- date of school entry;
- date of school exit;
- program of study using Classification of Instructional Programs (CIP code) when possible;
- competency scores;
- grade point average;

- completion status; and
- type of degree earned such as certificate or associate degree.

The county of residence of former students is useful in relating workplace experiences of formers students to local economic conditions such as unemployment rates, growth patterns, etc. (Review **Chapter Four** for the core of data elements used by the demonstration project.)

It is important to determine data priorities before requesting information from the administrative data sources discussed in the steps below. Also, decisions must be made about **which** and **how many** quarters of data will be requested. Costs of data collection and processing by these administrative sources will be a factor here. If data are sought from adjacent states, the cost for this additional data collection and processing will also need to be factored into the total cost.

Step 3 should be carefully studied to:

- learn about recommended data elements for collection; and
- determine the feasibility of obtaining some of the desired data elements.

Remember it is easier and usually less costly to ask for what is needed up front, rather than submit a second request that could have been completed at the same time as the first one.

Summary

Planning is a key step in implementing the record linkage approach to determining workplace outcomes for former vocational education students. Learn from what was accomplished by the demonstration project described in this report and by ongoing efforts in several states. State staff will benefit from considering the lessons learned from these early efforts in linking school and state UI wage records before making decisions on appropriate actions to take towards state implementation. A planning checklist is provided for the reader's use on the following page.

Planning Checklist

Practitioners, program analysts, and other state staff can use the following list for step-by-step planning of the state implementation of record linkage.

- ☐ Obtain and become familiar with the current confidentiality provisions of Federal and state statutes that the SESA will use to reach a decision on the request for access to state UI wage records. Be sure to carefully review the U.S. Department of Labor's proposed regulations issued March 23, 1992 in the Federal Register on the release of wage data records.
- ☐ Learn about the compliance requirements of other administrative data sources.
- ☐ Obtain legal counsel if needed to determine whether a former student's social security number can be used to link records with state UI wage and other data sources.
- ☐ If record linkage is a permissible activity in the state, then begin to plan for an interagency agreement with the SESA.
- ☐ Research the following topics for inclusion into the interagency agreement:
  - * how the data are to be exchanged;
  - * what data elements are to be requested;
  - * how data will be stored;
  - * when data will be returned to the SESA;
  - * what security arrangement will be followed when data are in possession of either party;
  - * conditions of termination of agreement; and
  - * reimbursement of costs.
- ☐ Determine data priorities and types of analyses to be conducted.
- ☐ Review information in **Step 3** on data elements and then determine the data elements to be requested from institutional records.
- ☐ Decide about which and how many quarters of data will be requested from the various administrative data sources. (See the section entitled **Effects of Data Collection Decisions on Outcomes in Chapter Five.)**
- ☐ Determine whether external factors such as economic conditions will be considered and from what sources this information will be sought.

Step 2.

IDENTIFY STATE AND FEDERAL ADMINISTRATIVE DATA SOURCES

Background

As has been discussed, there are many possible ways to record postprogram employment and earnings measures. Step 2 presents detailed information about existing state and Federal administrative data sources that may be available to state agencies for follow up of former postsecondary vocational education students. Before pursuing this approach, practitioners and policymakers need to be aware of basic information about each data source, the strengths and weaknesses of each, and the process for requesting access to the data. But first, some of the limitations of the current methods of collecting follow-up data are noted, and some of the reasons to link with administrative data sources are presented.

As mentioned earlier, teachers and school administrators are often asked to determine the placement status and starting wage rate at the time of the student's departure. Student alumni surveys are sometimes used, but these are often subject to low response rates, inaccuracies in self-reported earnings, and higher response rates by employed alumni, compared to those not working.

Some of the problems that arise from these current methods of collecting post-program outcomes data include:

- **Nonresponse biases.** A nonresponse bias occurs when information obtained from those who are found and respond is not representative of the information that would have been collected if **all** former students had been contacted. This bias is particularly serious when these data are to be used for performance-based resource allocation purposes.

- **Measurement error.** The measurement error problem arises when respondents are unable or unwilling to provide accurate information.
- **Low Response Rate.** The lower the response rate the greater the likelihood of measurement error and non-representativeness of reported findings. Attempts to reduce the number of nonrespondents may significantly increase data collection costs.
- **Reduced anonymity.** Follow-up strategies often reduce anonymity and require a more intensive effort on the part of staff.
- **Difficulty in locating.** Former students who are not living in the local geographical area are likely to be more difficult to find.

In the demonstration project, extant state and Federal administrative data sources are examined as a way to reduce the cost of data collection, while realizing an improved ability to monitor employment and earnings information over time--a rare opportunity to simultaneously reduce cost and improve quality of information! As mentioned previously, the term 'administrative data' covers any employment and earnings information that is already collected for a purpose other than the intended follow-up use.

Only **extant data** are required in this approach. Telephone, mail, or in-person contacts with former students to collect supplemental or **other** types of postprogram information can be undertaken **in addition** to the use of existing administrative data, if so desired.

Step 2 provides details about the following administrative data bases:

- State Employment Security Agency Unemployment Insurance (UI) wage records;
- U.S. Office of Personnel Management;
- U.S. Department of Defense Military Enlistment Information;
- U.S. Postal Service;

- Social Security Administration Information; and
- Internal Revenue Service Information.

Information on each data base includes the type of wage information reported, kinds of employees included, and the reporting schedule. These are important points that practitioners must know before making decisions for state implementation.

State Employment Security Agency Unemployment Insurance (UI) Wage Records

Two reactions are often heard when the topic of UI wage records is introduced. One reaction is that previous attempts to work with State Employment Security Agency (SESA) personnel were unsuccessful and there is a lack of motivation to try again. Two, UI wage record data are confidential and cannot be shared with anyone.

Recent events should encourage those who have been turned away in the past to try again. The Unemployment Insurance Service in the Employment and Training Administration of the U.S. Department of Labor has been working with the Interstate Conference of Employment Security Agencies, and with individual state agency administrators and other interested parties, to grapple with the complex legal and administrative problems that arise in responding to third-party requests for access to confidential administrative records.[45]

The U.S. Department of Labor issued proposed regulations for comment in the March 23, 1992 Federal Register. These proposed regulations should be studied carefully before pursuing discussions with the SESA.

Many states have amended applicable statutes and administrative regulations to permit more widespread access to these files, without compromising the confidentiality provisions. For example, Florida and Oregon each passed laws mandating the use of State UI wage records for documenting employment and earnings outcomes. In its administrative documents, Ohio specifically refers to the use of these data for the same purposes. These states, and others, have developed interagency agreement documents, which codify and routinize the rules for handling requests for information.[46]

Having said this, practitioners should keep in mind that the state unemployment compensation divisions of SESAs have been affected by the combined pressures of high UI claim loads, introduction of extended benefit coverage, and budget and personnel restrictions. Publication of the U.S. Department of Labor's proposed regulations for the release of confidential agency records on March 23, 1992 have heightened the agencies' concerns about the linking of records. State staff should keep these concerns in mind as they talk with UI staff and be sensitive to their concerns.

Information Reported

For each covered employee, an employer is required to report: (1) the employee's social security number and (2) the total amount of earnings during the quarter.[47] Employers also report their own unique employer identification number,[48] geographic location,[49] and industry affiliation.[50]

No information about specific occupations is available in the State UI wage record reporting system.[51] The Unemployment Insurance Service in the Employment and Training Administration of the U.S. Department of Labor, and individual SESAs, generally oppose this addition for two reasons:

(1) It would be costly to both the reporting employers and to the SESAs to comply with this additional reporting burden; and

(2) They question the quality of information that would be received.[52]

Employee Coverage

Each employer who is required to comply with a state's unemployment compensation law submits a quarterly wage report. **Employer coverage is defined by state law**, so many minor differences show up among the states. There are four key groups of wage earners not included in state UI wage data for a particular state:

(1) self-employed people;

(2) employees who are paid on a commission basis only (i.e., they receive no salary);

(3) Federal government employees; and

(4) people who work outside the state in question.[53]

The first three groups--self-employed persons, people working on commission and Federal government employees--combined make up no more than 3 percent of the labor force nationwide.

Policymakers and others considering the future use of state UI wage records for education outcome measurement purposes should answer two questions about these coverage limits:

- How will the four groups of workers not included in state UI wage data affect the accuracy of the intended use of the records?
- Is there a practical way to complement the wage record data with other information to compensate for any unacceptable gaps that are identified?

Step 3 offers assistance in answering these questions. Practitioners must then add details about their own state's coverage provisions and about the specific intended use of the information.

Reporting Schedule

The quarterly report of employment and earnings information is required to be submitted to the SESA within one month of the end of a quarter.[54] The SESA then has two additional months to process the data before it must be available for internal administrative use in managing the state's unemployment compensation program. This means that, in principle, the state UI wage records are available for use with a one-quarter lag.[55] However, each of the SESAs has many data processing demands that affect its capacity to respond to external requests for data. Thus, delays sometimes occur in the release of these files.

Among the questions that must be answered by anyone who is contemplating asking a SESA to provide wage record information are:

1. Which of the four quarters of state UI wage records should be requested?
2. How many years of data, past and future, should be sought?
3. How soon after the state UI wage records become available are they really needed for the intended purpose?

Aspects of each of these questions are examined in **Step 3**.

Why Use State UI Wage Records?

The study revealed four significant advantages to linking school information on former students with state UI wage records:

- Completeness of records. The state UI wage records contain earnings data on about 97 percent of all employees (except in Massachusetts and New York.)[56] This contrasts with the low response rates and consequent nonresponse biases often obtained though alumni surveys.
- Ease of linkage. The social security number of students is the only required identifying element for record linkage.
- Cost effectiveness. Access to these data sources for postprogram data collection provides a cost-effective alternative to time consuming, low response methods such as student surveys. State officials of a state using UI wage data supplemented by other sources reported that the cost for obtaining outcome information had been reduced from $17.00 to $3.00 per student.
- Availability of data for longitudinal studies. Data are available by quarter and for a period of at least four years, thus, administrators may conduct short-term and longitudinal analyses. Availability of long-term data may vary from state to state.
- Timeliness. A quarter's wage record data are generally available within four to six months.

Thus, the use of state UI wage data for tracking the workplace experiences of former vocational education students should be given careful consideration. Information in the following sections provides an overview of the other administrative data sources.

U.S. Office of Personnel Management

The U.S. Office of Personnel Management (OPM) maintains employment and earnings files for all Federal civilian employees. The Office of Workforce Information in the Personnel Systems and Oversight Group of the U.S. Office of Personnel

Management reviews external requests for access to information about Federal government civilian employees. The Office of Workforce Information maintains two files:

(1) A Central Personnel Data File, which is a cross-section or snapshot measurement of employment at a particular point in time; and

(2) A Released Dynamics File, which offers an opportunity to conduct longitudinal investigations.

To date, only the demonstration project and Florida's Education and Training Placement Information Program are known to have requested unit record information from OPM for educational outcomes documentation purposes. In anticipation of others following in these footsteps, there is an urgent need to design and implement a procedure that would standardize and consolidate future requests for such information, so as to minimize any burden on OPM. If this is not accomplished in the near future, then OPM may be forced to deny all requests, because a large number of independently submitted requests cannot be processed in an ad hoc sequential manner.

Information Reported

The demonstration project and Florida's Education and Training Placement Information Program limited the request to OPM to the following data elements:

- Federal employing agency;
- state, county, and city of duty station;
- occupation; and
- salary.[57]

Many other data elements are included in the Central Personnel Data File and in the Released Dynamics File. Some of these data elements might be relevant to the study of employment and earnings. However, OPM is not required under the Freedom of Information provisions to release these other data elements on a unit-record (e.g., identifiable employee) basis as they are with the four data elements listed above.

Employee Coverage

All Federal government civilian employees are covered.[58] The Central Personnel Data File records only an employee's status during the quarter in question. The Released Dynamics File offers an opportunity to retrieve information about all previous Federal government civilian employment positions held. Coverage of any extended number of years would be expensive, since information for each quarter must be extracted separately.

Reporting Schedule

There is at least a six-months lag in the availability of information from the "current" Central Personnel Data File. Since the Released Dynamics File includes only previous quarters of data, there is no additional delay involved in acquiring information from this file.

U.S. Department of Defense Military Enlistment Information

The U.S. Department of Defense maintains a Manpower Data Center facility in Monterey, California. Personnel data for each of the military services are archived in

Monterey. Requests for information about military enlistees are reviewed by the Data Center's administrators, who are headquartered in Alexandria, Virginia. Earnings data require a more complex approval process than employment information. Upon approval from the Data Center's administrators, requests are then forwarded to the facility in Monterey for processing.

Again, following Florida's lead, data items that were requested from this Data Center by the demonstration project included:

- branch of military service;
- military occupational specialty code; and
- date of enlistment.

Other data items are available, such as duty station, rank, and training obtained within the military. However, these items are less pertinent to studies of employment and earnings.

The same caution that was mentioned with respect to burdening the U.S. Office of Personnel Management with independent data requests applies here as well. A consolidated approach needs to be investigated.

U.S. Postal Service

The U.S. Postal Service maintains its own employment data base for all U.S. Postal employees. This data base is similar in structure and content to the data base maintained by the Office of Personnel Management (OPM). This data base was not used during the demonstration project, but has been regularly used by Florida's Education and Training Placement Information Program. At present there is no charge for access to this data base, but a charge may be implemented if demand exceeds an easy ability to provide response. The data base is updated on a continuing basis. When requesting information from this data base, the time period for matching **must** be specified.

This data base contains information that is similar to that maintained by OPM for Federal civilian employees. It includes postal location, pay grade, and occupational title.

This data base includes all U.S. Postal Service employees. In Florida, approximately half as many former students were found to be postal employees as Federal civilian employees. This ratio can be expected to vary across states. Provisions of the Computer Matching and Privacy Act of 1988 (P.L. 100-503; 5 USC 552a) govern access to this data base, as with other Federal data bases.

Social Security Administration Information

Many people do not distinguish between the state-specific SESA wage record data source and the Federal government's Social Security Administration collection of annual earnings information.

Baj and Trott report that:

> ...among administrative data sources, the earnings files maintained by the Social Security Administration (SSA) pose the most serious challenge to UI wage record files as a source of longitudinal data. However, there are serious drawbacks to the use of SSA files. Since SSA records report only [truncated] annual earnings, analyses of the postprogram trends of employment and earnings must focus on the year-to-year changes in the measures. Furthermore, since earnings above the taxable maximum are not reported, statistics generated from SSA data can be biased.
>
> The most critical weakness of the SSA earnings files is the substantial delay in obtaining the data. Typically,

> the data are three to four years old before they are released in a form that analysts can use. Even then, a considerable amount of time is required to compile and analyze the data before evaluation results can be published.[59]

The Social Security Administration, by policy, does not release unit-record information. Requests must be submitted in blocks of social security numbers based on a predetermined table shell design and analytical plan. Once the request is submitted, these aggregation decision rules cannot be reversed. This means that when preliminary analysis offers hints about further queries that might be desirable the aggregated data represent a barrier to pursuing the preferred diagnostic.

Internal Revenue Service Information

Earnings information extracted from individual Federal tax returns has been used to investigate education postprogram outcomes. This data source has the advantage of covering all income, whether or not the former student worked in the state of previous school attendance. However, as with Social Security Administration information, there are several limitations:

- unit-record data cannot be released;
- a substantial delay in availability (estimated to be three to four years);
- firm and industry information are not available; and
- perhaps most importantly, earnings from a specific job or employer cannot be isolated.

Summary

In summary, **Step 2** provided the details on each administrative data base that is currently under consideration for linkage to determine employment and earnings outcomes for postsecondary vocational education students. As can be seen, each data base has its strengths and weaknesses, the availability of data varies as well as the length and requirements for requesting linkage with these data bases through social security numbers of former students.

Step 3 follows and provides information on key data collection issues. These issues include important guidelines on data elements, confidentiality of student and employer records, and determination of external factors to consider for data collection.

Checklist for Data Sources

State staff and others should be familiar with the following aspects of each data source:

☐ State Unemployment Insurance (UI) wage records

- * Information reported by employers
- * Employers required to report
- * How often reporting occurs
- * How to request access to data base

☐ U.S. Office of Personnel Management Data

- * What files are maintained
- * Who is covered in files
- * What information is provided
- * How often reporting occurs
- * How to request access to data base

☐ U.S. Department of Defense Military Enlistment Information

- * What information is contained in the files
- * How to request access to data base

☐ U.S. Postal Service

- * What information is contained in files
- * How to request access to data base

☐ Social Security Administration Information

- * What information is contained in files
- * How to request access to data base

☐ Internal Revenue Service Information

- * Information in files
- * How to request access to data base

Step 3.

MAKE DATA COLLECTION DECISIONS

Background and Overview

During the past two years colleagues in four states (Colorado, Florida, Washington, and Wisconsin) have published reports that describe the use of SESA UI wage records for vocational education follow-up purposes.[60] Colorado's Community College and Occupational Education System has developed a consolidated longitudinal data base that includes:

- Both secondary and postsecondary occupational student records;
- Colorado Commission on Higher Education student records for those who have gone on to a public college or university in the state; and
- Colorado Department of Labor and Employment wage records.

Florida's Education and Training Placement Information Program has consolidated these three types of sources of unit-record information, plus additional sources including Job Training Partnership Act (JTPA) and Department of Correction records, and U.S. Office of Personnel Management, U.S. Department of Defense, and U.S. Postal Service personnel information.

Washington's State Board for Community and Technical Colleges has conducted a cross match of its vocational preparatory program completers and Washington State Employment Security Department UI wage records, and has conducted sample surveys of these completers and selected employers.

The University of Wisconsin's Vocational Studies Center performed cross matches of postsecondary vocational/technical education program completers with both Wisconsin Department of Revenue (state income tax) and Wisconsin Department of Industry, Labor and Human Relations wage records. It also extracted a comparison group from U.S. Census data.

Other states can learn from these pioneering efforts. Refer to the endnotes for names of reports issued by these states for further information. To take advantage of these pioneering statewide efforts, a consortium of five states (Colorado, Florida, Maryland, Missouri, and Washington) has been established in support of the National Assessment of Vocational Education mandated by the U.S. Congress. The outcome of the ongoing dialogue between the five member states of the consortium and the University of Baltimore's Regional Employment Dynamics Center may serve as a model for others in the future. In Colorado, Florida, Missouri, and Washington state the lead partner in the consortium is a state education agency, which in turn maintains a formal agreement with its State Employment Security Agency (SESA). In Maryland, the SESA took the lead in establishing a relationship with partners from the education community.

Each state will have to make certain decisions before and during the implementation phase of record linkage. Before reviewing essential data collection issues, the unique features of the demonstration project should be noted. Practitioners may wish to include some or all of these unique features in the implementation phase in their state.

Features of the Demonstration Project

Unique features of the demonstration project which complement the individual state efforts described above, but go beyond them in scope, include:

- The introduction of "external factors" (e.g., measures of local economic conditions and changes in these conditions over time) to put employment and earnings outcomes into the context of local circumstances that are beyond the control of vocational educators;
- Development of multiple presentation formats to meet the needs of different potential users of the information, while protecting the anonymity of former students and employers;[61]
- Access to more than four years of wage records for one of the cooperating states, which permitted investigation of topics that others have been unable to address; and
- The inclusion of proprietary institutions (i.e., private career schools).

To establish a comprehensive merged data base, the demonstration project adopted Florida's basic approach.[62] A core data file was assembled that included:

- Unit-record (i.e., school-based transcript) information for discrete cohorts of former students in public[63] and private[64] postsecondary occupational programs;
- Within-state UI wage records covering multiple years of postprogram employment and earnings;[65]
- Military enlistment data; and
- Federal civilian employment information.

Following the state of Washington's lead,[66] State UI wage records for adjacent states were incorporated.

Measures of local economic conditions were added to these replication steps to permit investigation of the effects of external factors on the former students' employment and earnings outcomes.

Data Elements From Educational Institutions' Records

Lessons learned from the demonstration effort are described in this section with the following cautions:

- Both public and private postsecondary institutions maintain unique record-keeping systems; this situation simultaneously creates problems (e.g., noncomparable data sets) and opportunities (e.g., unique data analyses not available for all institutions); and
- The availability of state wage record data elements, and other external factors information, from a SESA may be constrained by state laws and administrative regulations.

Institutional Records

The governance of public and proprietary education is unique in each state. Even when the topic of interest is limited to occupational programs, two or more governing bodies are likely to be involved. Students in an occupational preparatory course at a public community college, at an area vocational-technical school, and at a private career school, almost always appear in different administrative data systems. It is, therefore, necessary to match students with the various institutions; and to achieve an unduplicated count, since a student may have been enrolled in more than one type of institution during the period of examination. Private career schools are subject to less uniform reporting requirements than publicly funded institutions in many of the states. This means that fewer common data elements will be found for proprietary schools.[67]

Social Security Number

The one data element that **must** be included in each student record, public and private, is an accurate **social security number**. Without this identifier, it is impossible to link student records with SESA UI wage, Federal civilian employee or military personnel files,[68] or with the U.S. Postal Service records.

A first step in data collection is to determine whether a former student's social security number can be used in the state for linking administrative records. As noted in **Step** 1, legal counsel is advisable in the early stage for two reasons. If record linkage using a former student's social security number is a permissible activity, the next action is to determine whether individual students records include the numbers, and if so, at what level the numbers are held (i.e., the institutional, district, or state level). If they are included in records maintained at one or more of these organizational levels, then determine at which level the files are electronically accessible.

Florida's Education and Training Placement Information Program has accumulated the most day-to-day practical experience in handling issues around social security numbers. The issues that must be successfully resolved are how to:

1. ensure mandatory recording of an accurate social security number for each student;
2. transmit the numbers to the office responsible for linking student records with SESA UI wage and other employment data sources; and
3. perform routine editing and auditing procedures to assure an acceptable level of accuracy of the numbers.

Mandatory entry of social security numbers on student records can be achieved through legislative or administrative means. An advantage of the legislative approach is that it insulates administrators within the education community from pressure to grant exceptions (e.g., allowing alternative student identification systems), which then lowers the quality of the resulting outcomes. However, when pursuing the legislative route, loss of control of the initiative can easily happen as political compromises are made.

Inevitably, some students will not give accurate social security numbers. Currently, school administrators have little incentive to verify that a reported number is the student's own, and not that of a friend or relative.[60] This has been a common sense response to awareness that accuracy of numbers has not mattered in most cases. In the past, administrators have asked the question: "Why overinvest in time and effort to ensure accuracy of the numbers when there is no expected payoff to this commitment and no sanction for noncompliance?"

In many instances, management practice does not reward high quality in reported data or punish low quality in data collection. Under these circumstances it may be easier to introduce a new mandatory reporting of student social security numbers, where no such requirement existed before, than it will be to raise the accuracy level of the reporting requirement that is already in place. In either case, there must be a clear message conveyed to administrators and students of the importance of this requirement--determination of future employment and earnings outcomes depends upon it.

To return to a point made earlier: some parties may fear any accountability system and seek to sabotage the collection of accurate information. Therefore, auditing procedures should be developed and maintained to improve the accuracy of the social security numbers needed to link student records and administrative data bases.

Missing Social Security Numbers

Missing and inaccurate social security numbers are unlikely to be randomly distributed among students. Students without work experience are less likely to have, or to know that they have, a social security number.[70]

Most people have become used to responding to almost casual requests for their social security number. The crucial hurdle for successful mandating of a new requirement to provide this information is to win over the minority who oppose voluntary compliance. It is important to offer appropriate staff training to those who will actually make the request--probably classroom teachers requesting the information from students--because these individuals must be convinced about the importance of accuracy of the data to enhance accuracy of the data collection effort.[71]

Student Consent

A possibly powerful complement to staff training is to ask each student to return a signed **informed consent** form. This form can be designed to describe exactly how the social security number will be used. Completion of such a form provides a release for the use of student information under specified conditions described by the consent form. This is one way to assure each student that their identity will always remain confidential in postprogram performance measurement investigations. The downside risk of this approach is that it will frighten some students, who would have offered passive informed consent[72] for the use of their social security number, into refusing to sign. Obviously, this protective approach can only be used with respect to current or future students.

The approach described in this report for determining postprogram outcomes does not **require** student consent, but such consent may be valuable in securing cooperation from necessary participating agencies (e.g., a state department of education or a SESA). However, before collecting signatures on consent forms, one is urged to seek the opinion of legal counsel about both time and scope limits on the use of informed consent forms. The cost of such a data collection effort must also be weighed against the potential benefits that are derived.

Curriculum Coding

A particularly difficult challenge facing policymakers and practitioners, especially for performance-based funds allocation purposes, is **program** definition. Programs with the same program content may have completely different titles, and programs with the same title may have different content and scope requirements.

The U.S. Department of Education recently released a 1990 revision of the Classification of Instructional Programs (CIP). A "cross-walk" was provided by the Education Department that permits users to map data coded from the 1985 CIP into the 1990 CIP classifications. The CIP is a six-digit coding system. At the six-digit level, substantial uniformity among programs coded within a given cell is alleged.[73] A teacher, program coordinator, or school administrator might find the full six-digit detail useful. Most higher levels of management could be expected to want some aggregation of six-digit CIP codes.[74]

Selection of a unit of analysis must ultimately be determined by the application that is intended for the data collected. No single practical rule can be stated here. If the employment and earnings information is to be assembled for dissemination to current students, and to their counselors and families, then data for a particular school and CIP code may be appropriate, since this is the frame of reference for the student's decision making. It may also be important to report findings along specific dimensions that summarize data across students (e.g., by sex, ethnicity, and previous educational attainment).

Chapter Five's treatment of "external factors" highlights the factual basis for concerns that comparisons among schools, and between programs within schools, too often ignore differences in student demographics and labor market conditions, which should be considered in the management's documentation of postprogram outcomes.

The objective in choosing a coding-level for curriculum content is to achieve an acceptable level of homogeneity **with respect to the specific intended use of the data.** That is, it is important that only like programs (on whatever unit of analysis is selected) are aggregated and reported when providing data relevant to that unit of analysis. The goal is to head off later charges that apples and oranges have been compared.[75] Too frequently, importance is attributed to what has been measured, rather than deciding what is important beforehand and then measuring it.

The amount of thought that goes into choosing a curriculum coding level should be a direct function of the range of consequences that might be expected to result from different approaches. Historically, those at both ends of compliance reporting systems have understood that heavy investments in assurance of accuracy were unwise. In isolated cases, where actual management decisions have been made on the basis of these figures, accuracy has been given greater weight.[76]

Unfortunately, the CIP coding system is rarely used by private career schools. The autonomy of these schools translates into the absence of any uniform curriculum coding scheme. This diversity can be expected to begin to collapse into some common approaches as more states move to impose mandatory reporting requirements on these schools. The newly established Career College Association can be expected to hasten this movement. This is not to say that quick and complete uniformity of reporting should be expected. Many of the career schools are quite small. Many do not have automated record keeping systems.

Student Demographics

Student characteristic data--particularly gender, race/ethnicity, and age--are important for postprogram outcomes purposes. Without these data elements, it is difficult to interpret former students' employment and earnings histories, which in turn might feed back into administrative decisions about applicant recruitment, counseling, and support services.

Additional information about the following characteristics will contribute to a deeper understanding of factors that influence postprogram outcomes:

- single-parent status;
- limited English language proficiency;
- disabilities;
- veteran status;
- financial aid eligibility and receipt;
- high-school graduation or GED;

- documented need for remedial services; and
- receipt of remedial services.

The objective in deciding how much demographic information to collect is identical to the process of thinking through how curriculum codes should be chosen. This question must be answered: "What data elements are needed to organize and interpret the information to meet the informational needs of the different users--consumers, vocational educators, and policymakers?"

Decisions about the collection of specific demographic data elements may be constrained by law, administrative regulation, or tradition. Even when such constraints are not encountered, anyone who proposes to organize and release postprogram outcomes information must be sensitive to possible consequences. For example, good intentions to publicize continuing segmentation of employment and gaps in earnings between men and women, or among ethnic groups, might increase the resistance that is encountered to the entire data collection and dissemination activity. Many educators plead that racial and gender-based disparities in employment and earnings cannot fairly be laid at the doorsteps of their programs, which are of little consequence relative to the influences of other social institutions including each student's home and work environments.

Decide what **really** should be accomplished with a postprogram outcomes documentation system, and then design data collection and dissemination efforts to meet these goals alone. Postmortem dissection of past failures to introduce and sustain a postprogram measurement system usually reveals few strategic elements--too ambitious, under-funded, casually managed, poorly marketed, and with inadequate feedback loops that would promote timely revision.

Substantial lead time is normally required to introduce new data elements into a statewide reporting system. Subsequent auditing is necessary to assure adequate maintenance of quality standards. This is a particularly serious problem in the education arena, because so much data has been collected without any apparent use. When those who are asked to submit data know that quality does not matter, they would be foolish to throw money away in quality assurance activities. It will not be easy to overcome this historical record. At least temporarily, significant investments in quality assurance must be made.[77]

Summary of Institutional Information

Most schools' information systems have been designed to document transactions (e.g., enrollment, attendance, and sometimes completion), and within-school achievements (e.g., test scores, grades, and maybe competency attainment). For most of these schools, serious and sustained measurement of postprogram outcomes will be a new undertaking. Course-load and grade information can be correlated with concurrent employment data, which has become much more important in the administration of postsecondary education as adult enrollments have grown.

Unfortunately, the timing and motivation for this new activity could hardly be worse. The typical motivation will be a "top down" directive from administration telling the schools that they are required to comply. Unfortunately, the timing is concurrent with widespread cuts in funding of local education activities in most states. This coincidence of requiring improved outcomes with less input is not conducive to enthusiastic cooperation.

This conclusion is precisely why maximum reliance on **already available administrative records** should be endorsed. In this way, local school administrators may not have to shoulder any additional reporting burden--if student social security numbers and other desired data elements are already being reported to the state. All employment and earnings outcomes can then be determined at the state level.[78]

SESA UI Wage Records

Details about state UI wage records were introduced in **Chapter Four and Step 2** of **Chapter Seven**. In this step, more advice is offered about how to decide whether State UI wage records should be sought, and then how to proceed if the decision is affirmative.

Every SESA has experienced extraordinary institutional tension throughout its existence. During the past 10 years, this turbulence has been exacerbated as funding has decreased and the agency's mission has been redefined. Currently, the unemployment compensation divisions within the SESAs are attempting to deal with growing claimant loads. This translates into severe pressures on each of the SESA's data processing units. A top priority of the SESAs has always been to issue unemployment insurance checks in a timely manner.

A SESA's Data Processing Priorities

The day-to-day management of UI claims processing depends in part upon the quality of the SESA's administrative records. The state UI wage record file that was described in **Step 2** exists primarily to permit timely retrieval of accurate information about a claimant's recent earnings, so an eligibility determination can be made for unemployment insurance benefits. The quality of this file depends upon voluntary employer compliance with reporting requirements and the SESA's auditing and enforcement practices.

Each state unemployment compensation law is unique to that state. Each SESA is affected differently by the flow of administrative funds and management decisions that are made with respect to the allocation of these funds. It is impossible to generalize here about the quality and availability of a SESA's administrative records. Both late reporting and nonreporting by covered employers does occur in every state. These two facts have different implications for the education community.

Late Reporting by Employers

Late reporting means that an employer fails to submit a required quarterly report of employee earnings within the one-month period specified in the law. The importance of this factor is that any state agency that proposes to request wage record information should ask the SESA personnel how the timing of the request will be affected by late reporting.

Nonreporting by Employers

Nonreporting means that an employer fails to submit a required quarterly report of employee earnings. The SESAs have become quite sophisticated in reducing the incidence of noncompliance, largely through automated cross-matching of records with other state agencies (e.g., tax authorities and business licensing agencies). There is a well-known pattern in nonreporting related to the size of the firm. Small new business start-ups are more likely to fail to submit the required reports.[79] Financially vulnerable businesses are also known to have a higher incidence of nonreporting than other businesses, for obvious reasons. Again, practitioners and program analysts must think through how nonreporting will affect whether and how state UI wage records will be used.

Reporting of Employer Identification Number

Every employer who has an established unemployment compensation account with a SESA has a state-specific **employer identification number.**[80] This number accompanies each wage record that is maintained in a SESA's data processing system, so a claimant's recent job history can be easily retrieved.

There are many nuances to the maintenance of employer identification numbers by a SESA. A state's experience rating practice, which may impose a higher unemployment compensation tax on firms whose former employees have a high incidence of claim filing, can create an incentive for a business (e.g., a small construction contractor) to close an existing account and establish a new account under a different name. The SESAs have well-established procedures to guard against such practices.

Each SESA has a codified procedure for creating what are called **parent-child** and **predecessor-successor** codes. Parent-child codes refer to a company's headquarters and subordinate facility. Predecessor-successor codes refer to sequential ownership circumstances. Each must be understood if there is an interest in tracing retention with a particular employer over time.

In special circumstances, such as longshore employment, some construction work, agricultural crew work, and employment by a temporary help agency or employee leasing firm, an employee will be reported by an umbrella organization which limits any ability to determine what the actual work-site assignment has been.

Work-Site Location

Employers who operate more than one work site in a state are usually permitted to choose between reporting employment of all employees at all sites using a single headquarters geographic code, or using a work-site code that actually indicates where each employee works.[81] Employers are also permitted by most of the SESAs to report using the address of their accounting firm, legal counsel, or service-bureau that processes their quarterly reports on their behalf.

Employee Identification

Everything that was discussed in the **Social Security Number** section of this step applies to employers. Large employers who submit their reports to a SESA electronically, or on tape or disk, create less of a risk of error than do smaller enterprises that submit their reports on paper. Most of the SESAs conduct periodic audits of the accuracy of employer reports, so state education staff can ask about accuracy of employer reporting to the SESA before deciding how to proceed.

Earnings

It has already been noted, in **Step 2**, that each state unemployment compensation law reflects minor differences in what earnings are covered. Wages, commissions, and bonuses[82] are covered in every state, so the core money compensation components are included. Non-wage benefits, which are extremely uneven across employers, and even among jobs within employing establishments, are not included. It must be ascertained exactly what is included in an employer's reported earnings figure in a particular state.

Multiple Wage Records

In many cases more than one wage record will appear in a given quarter for a particular former student. This means that the person worked for more than one covered employer in the state during that three-month interval. Remember, a wage record is specific to one employer and one employee!

When more than one wage record appears in a quarter for a particular person, this may represent one of the following scenarios:

- sequential employment without interruption, such as one job followed immediately by a new job without any time lapse in between;
- sequential employment with time between jobs; or
- overlapping employment when more than one job is held simultaneously.[83]

The question needs to be asked: Does the appearance of multiple wage records in a quarter represent an interpretive problem in determining the employment and earnings outcomes of vocational education programs?

Full- and Part-Time Employment

What you see is what you get in a SESA's administrative records. **With a few exceptions,[84] it is not possible to determine how many hours per week and how many weeks a person worked during the reporting period.** This means it is not possible to derive an hourly wage rate equivalent from the earnings figure.

Other Administrative Data Elements

A wage record is only a record of earnings during a specific quarter that is related to a particular employer. For some purposes, practitioners and program analysts may be interested in knowing the following:

- industrial affiliation(s) of former students;
- size of the firms in which former students are working; or
- changes in the levels of employment within firms or industries with which former students have been employed.

It is important to remember that **you only get what you ask for when a request is submitted to a SESA.** If any of the above-mentioned types of data elements are needed, then they must be requested. Be aware, though, that each additional data element requested translates into more difficulty for a SESA in satisfying the request, higher cost for data processing, and probably a longer delay in receiving the data. SESA administrators are particularly skeptical of "laundry-list" requests that do not reflect careful prior thought about what will be done with the information once it is received. Future requests may require an explanation of **exactly** how the individual data elements will be used, and what the nature of the proposed public release of information will be. **Step 4** offers specific suggestions about how to prepare for a rigorous review of a proposed use of a SESA's administrative records.

Confidentiality of State UI Wage Records

This topic has been reserved for the end of the section on SESA UI records, so readers have the full array of other data issues clearly in mind when this is read. **Every state unemployment compensation law prohibits a SESA from revealing any individual or employing establishment identity to the public.** There can be no exceptions to this statutory requirement, because to do so would damage the SESA's credibility and continuing need to collect accurate information in support of its own administrative responsibilities.

Any agency that intends to request individual unit-record information from a SESA must be prepared to assure the SESA that it can satisfy the request with complete confidence that both the letter and the spirit of the confidentiality stipulation will be upheld. **Step 1** described the ongoing efforts by the Unemployment Insurance Service in the U.S. Department of Labor's Employment and Training Administration, the Interstate Conference of Employment Security Agencies, the individual SESAs, and some governors and state legislatures, to create practical ways that reasonable requests for access to administrative records can be honored.

SESA Data: A Final Statement

Readers should not despair about the complexities of a SESA's reporting system as discussed in this step. The many exceptions to the rule are mentioned to be sure that each practitioner knows what questions to ask SESA personnel. **An overwhelming percentage of all quarterly wage reports are submitted on time, accurately, with a consistent employer identity, and with a single work-site code.**

Model legislative language, regulatory directives, management documents, and predecessor experiences are now available to any reader. SESA administrators can be expected to be most responsive to thoughtful requests that reflect an understanding of the SESA's delicate position. For the record, a universal expectation concludes this section--**SESAs require reimbursement for the costs that are incurred in responding to third-party requests for data retrieval.**

Data Elements for External Factors

The term "external factors" was defined earlier as measures of those forces that are thought to affect employment and earnings outcomes, but over which educators and administrators exercise little or no control. External factors are valuable to any postprogram outcomes system because they allow the outcomes to be considered in the context of those influences that are beyond the control of educators. Such considerations are of particular importance if irreversible curriculum choices by students are affected by the outcomes data, if decisions about curriculum continuity are involved, or if public awareness of school comparisons is intended.

Chapter Five described how external factors were considered by the demonstration effort. Choices among possible data elements for external factors will be driven by the use intended for the postprogram measures. Indices of changes in the overall level of economic activity might suffice, if the goal is to offer school administrators a hold-harmless protection against the loss of job opportunities that accompanies a recession. Even this aggregate approach must be given geographic specificity, since all school districts are not affected uniformly by the ebb and flow of the Nation's economic vitality. Unfortunately, the smaller the geographic area that is chosen, the more difficult it is to find timely and accurate data to reflect the changes in local economic activity. Practitioners are advised to contact the labor market analysts at the SESA for further information about what sources of economic information are available.

If the intended use of employment and earnings information is to offer students, counselors, and family members an accurate "feel" for future prospects if a particular choice of curriculum is made, then the selection among external factors becomes more difficult. In this case, what is sought is a reliable translation of the historical record into future opportunities. Here, changes in the **mix** of employment opportunities takes precedence over changes in the **level** of employment. A SESA is a good place to start to become informed about what labor market information is available. Another agency to contact is a State Occupational Information Coordinating Committee (SOICC) to learn about the resources and information they have on future occupations and changes in the labor market.

Many changes of traditional industrial relations practices are occurring, which threaten the relevance of some existing data series. An increasing number of companies are collapsing the number of job classifications that apply to their production work force. This practice blurs previous sharp distinctions among occupational definitions, which increases the difficulty of tracing the extent of overlap between the content of an occupational curriculum and a particular work setting.[85]

If the intended use of employment and earnings information is to establish a performance standard, then particular care should be exercised in the selection of external factors. The JTPA experience may be very helpful as a continuing refinement of individual factors and measurement techniques.

One point cannot be overemphasized--**the purpose for establishing performance standards should be clearly stated, so that all affected parties know how much importance to give to individual measures.** The **Appendix** offers more information about outcome measures and performance standards.

A Recap of Data Collection Issues

The purpose of this section of the paper has been to sensitize readers to data collection issues. The important points to remember are that:

- Unthinking reliance on a cookbook approach is virtually certain to result in a short-lived postprogram outcomes system.
- There are many state-specific differences in both data availability and the intended uses of data.
- Each SESA, which may be a valuable source of assistance, has its own priorities that take precedence over third-party requests for cooperation.
- There is no substitute for thoughtful preparation of a strategy that clearly lays out **why** postprogram employment and earnings information is sought, what other information is needed to properly interpret these data, and how the adjusted information is to be released to the public.

Step 4 offers advice on data processing issues.

Step 4.

DEVELOP DATA PROCESSING PROCEDURES

Introduction

Data processing capabilities are even more idiosyncratic than data availability. Individual schools, school districts, state departments of secondary and postsecondary education, higher education coordinating boards, private career schools, the SESA, and other potential sources of external factors data, represent unique data processing challenges.

Having said this, there are common data processing issues that each such initiative must deal with and resolve. These include:

- integration of systems, so information that is transferred among units can be processed in a routine manner;
- timeliness of movement of information among the various players (i.e., place in the queue of each agency's priorities, and maintenance of a tightly knit sequence of steps among these agencies);
- assignment of responsibilities among agencies when more than one might satisfy a need;
- determination of funding arrangements among participating agencies; and
- completion of required interagency agreements.

Integration of Systems

During the two-year demonstration project, 22 independent sources of unit-record data were processed--probably more than would be encountered in a typical single-state system. The data processing facility used in this project permitted acceptance of data in many different forms.[86]

Nevertheless, two instances arose in which the data received could not be processed in its transmitted form. In one case, an obsolete disk-pack received from a career school could not be accommodated. The school had no way to transfer the historical records from this medium to a more current system. Luckily, the school had retained a hard-copy printout of the student records. Standard, and costly, data-entry was then required to handle this information. In the other case, a contemporary cartridge medium for storing data was used, since the transmitting agency assumed it was in standard use elsewhere. The required information had to be rerun using a traditional tape medium. Even with a common medium, there are formatting differences among available operating systems.[87]

The data processing flexibility and security available for the demonstration study are unlikely to be found in many bureaucratic settings. The day-to-day priorities of data processing staff members, and equipment and software limitations, can be expected to interfere with the timely and cost-effective completion of necessary data processing steps. This adds one more incentive for thinking through what data elements are required, when they are needed, and to what extent processing will suffice.

The most important advice that can be given is to not take anything for granted. Do not make **assumptions** about:

- how requested data might be transmitted;
- when it will be sent;
- what charge will be assessed;
- what documentation will be included; and
- what quality assurance will be offered.

Specify each of these aspects of the request in writing at the outset. Increasingly, the other party will require that these features of a request be spelled out anyway, so be prepared.

It is always important to be sensitive to the burden that is placed on a data processing unit when a third-party request for information is submitted. Special-purpose programming requirements should be justified. Maybe a "dump" of records can be accepted, and the desired data fields can then be extracted for analytical purposes.[88]

Data processing units are subject to their own agency's fluctuations in the timing of demands for service. Taking the following action steps will help to speed the process along:

1. Make an effort to find out when the demands on an agency are heaviest, and avoid these times when requesting cooperation.
2. Specify a realistic deadline when the data are needed. Be sure that the data processing unit understands that this is a real deadline, which fits into a sequence of activities, so the staff takes the delivery date seriously.
3. When flexibility is possible, tell the data processing unit this–they will appreciate the breathing room, and may remember when a tighter deadline is necessary in the future.
4. Do not hesitate to check with a data processing unit to be sure that the request was received, that all responsibilities have been met (e.g., up-front provision of a tape to be used for data transmittal), and that no unexpected glitches have arisen. When priorities do get shuffled, remember that the data processing unit is usually a subordinate player in this exercise–do not take frustrations out on them, and do not expect them to take the time to alert third-party requestors to a revised schedule.

Waiting for the phone to ring, or for the mail to arrive, is an often repeated mistake that cannot be easily explained to one's own superiors.

Data processing technologies and costs are in continuous turmoil. Vendors come and go. It is impossible to anticipate what the range of configurations may be within just a few years. However, it is very important to keep informed about this progress, so that a cooperating partner's adoption of a new processing capability with trickle-down effects on the activities does not come as a surprise.

Interdependencies in Data Flows

The reader may not have to juggle 22 data sets, as was necessary in the demonstration project, but it will always be necessary to exercise limited control over the various players whose cooperation is essential to success. It is not unreasonable to calculate the lead time that is thought to be necessary to obtain a specific set of records, **and then double this figure!** Even when a consistent track record of on-time delivery has been enjoyed in the past, this performance cannot be counted on to continue into the future. Today's state and local budget demands offer an unfortunate example of this principle--organizational capabilities to service third-party requests are being compromised throughout the nation.

There are two specific actions can be taken in an attempt to keep a cap on the number of disappointments that arise:

- **Create a flow-chart of the different steps that are involved in obtaining, processing, analyzing, writing-up, and releasing information.[80] Share a draft of this flow-chart with others to assure accuracy. Attach time lines to the flow-chart and allow buffers, or cushions, that absorb the impacts of unexpected delays.**

- **Be sure that each of the cooperating parties knows where they fit in the overall scheme of things. This does not mean that the time-dated flow chart should be shared with everyone - - particularly if it reveals the allowances that have been made for missed deadlines! But each player should understand that he or she represents just one station along a complex assembly line.**

Having said the above, do not expect these players to be as concerned about the deadlines as the person making the request--they have their own priorities and incentives. Remain alert to possible domino effects. A legislative, judicial, or administrative action might change the content, or the timing of availability, of a source of data. This will affect the timing, and even the practicality, of moving this source along to the next processing step. Seasoned managers cite a fear of this domino effect as a reason for their reluctance to give up tightly controlled (i.e., largely autonomous) information flows.

Assignment of Responsibilities

There are at least two important questions to answer before deciding what institutional roles should be served by which agencies. One obvious question is: What agency is most qualified to provide this service? Here, the word **qualification** covers both an agency's willingness and ability to perform.

In one of the states that cooperated in the demonstration project, there were three possible ways to obtain unit-record information on former community college enrollees:

(1) each community college;
(2) the state's community college board; and
(3) the state's higher education coordination authority.

The actual data elements available through each of these three sources are, in principle, roughly the same.[90] It is obviously less costly to acquire common data elements from a single state source, when this opportunity is available. However, this is likely to require an institution-by-institution consent to permit the request to be honored. This is another reason to do careful homework ahead of time, so one-time opportunities to gain approval are not missed.[91]

Funding Arrangements

A SESA will require a signed agreement that guarantees payment for costs they will incur in responding to a request for administrative records. Many variables affect the billing amount, including whether administrative and programming costs are included. During the demonstration project, a cooperating SESA submitted a bill of $300 for a one-time match of the social security numbers of former students against the SESA's five-quarter active file of UI wage records.

The U.S. Office of Personnel Management, and the U.S. Department of Defense Manpower Data Center, determine charges on an individual request basis. The previously mentioned need to establish a **consolidated** request procedure would minimize the costs incurred by any one state.

Completion of Interagency Agreements

Review the interagency agreement discussed in Step 1. To date, the agreements that have been designed by SESAs cover a common core of issues that must be addressed. These include:

1. Why are the data being requested?
2. Precisely what information is sought?
3. Who will have access to the information?
4. How will confidentiality be assured?
5. In what form(s) will the information be released to the public?

6. When is the information needed?

7. What transmittal medium is requested?

8. Who certifies that costs will be reimbursed?

Recently, the SESAs have begun to require an explicit provision for return or destruction of the confidential records when an agency's specific need for the data has been satisfied. The SESAs are wary of open-ended requests that increase the likelihood that confidential information will be lost once the initial application has been completed. Signatories to a formal agreement can be held accountable, and a SESA can be confident that these original users understand and will abide by the rules. However, other parties who subsequently become aware of these records might be expected to be more careless in the handling of the data. Remember to review all requirements as proposed for record linkage by the U.S. Department of Labor and issued in the March 23, 1992 Federal Register.

Summary

None of the topics that have been treated in this step should become a barrier to successful interagency cooperation in most settings. However, there will be exceptions to this general rule. In some cases, even these exceptional circumstances can be overcome.

Persistence is an important behavioral trait in any attempt to acquire administrative information from another agency. Legal counsels are properly conservative in their interpretation of what can be done. Data processing unit managers are equally conservative in their acknowledgement of what **should** be done. This cautious attitude will not change. A SESA gains very little by agreeing to cooperate, but it stands to lose a lot if its confidential records are handled improperly by a third party.

Step 5.

Conduct Data Analysis

Described in this step are ways to present the data to satisfy various consumer interests and some of the important considerations about analysis of longitudinal data. But, first, it provides an explanation of how to build a comprehensive data platform, which serves as a foundation for customized reporting of findings.

How to Build A Comprehensive Data Platform

A comprehensive data platform is built in a two-step process by using all the different data sources and consolidating them into a single format. Table 5 shows the first step used in the demonstration project. (Table 5 was first presented in **Chapter Five.**) It gives actual reported earnings figures for former students of all five participating community colleges for **one** state. Six data sources are reflected in Table 5:

- individual student data for five participating community college institutions in one state;
- curricula data for students who attended the five participating community colleges; and
- state UI wage records data for employees employed during **any** one quarter in a year, and for employees employed during **all** four quarters in a year.

Table 5 shows the universe of all fall 1984 first-time enrollees in selected occupational programs at the five community colleges. Two occupational programs were selected to highlight important figures of the demonstration effort--Secretarial Science and Real Estate.

TABLE 5
Employment and Earnings by Program for 1984 Community College First-Time Enrollees
(All Participating Institutions In One State)

PROGRAM: SECRETARIAL SCIENCE (Enrollment: 275)

Year	State Wage Records (1)					
	# Employed in some qtr.	Percent Employed	Mean Earnings	# Employed all 4 quarters	Percent Employed	Mean Earnings
1987	180	65%	$ 9,699	125	45%	$ 11,901
1988	174	63%	$ 10,665	109	40%	$ 14,333
1989	162	59%	$ 13,179	109	40%	$ 16,989
1990	152	55%	$ 13,466	93	34%	$ 17,443

PROGRAM: REAL ESTATE (Enrollment: 142)

Year	State Wage Records (1)					
	# Employed in some qtr.	Percent Employed	Mean Earnings	# Employed all 4 quarters	Percent Employed	Mean Earnings
1987	93	65%	$ 26,842	78	55%	$ 29,471
1988	95	67%	$ 26,239	71	50%	$ 33,291
1989	90	63%	$ 29,068	68	48%	$ 33,843
1990	88	62%	$ 31,976	64	45%	$ 37,815

ALL PROGRAMS: (Enrollment: 1631)

Year	State Wage Records (1)					
	# Employed in some qtr.	Percent Employed	Mean Earnings	# Employed all 4 quarters	Percent Employed	Mean Earnings
1987	1084	66%	$ 12,917	743	46%	$ 16,308
1988	1073	66%	$ 14,018	712	44%	$ 18,372
1989	1010	62%	$ 16,175	685	42%	$ 20,488
1990	974	60%	$ 17,297	589	36%	$ 22,701

NOTES: (1) State employment figures were calculated using two rules. Rule 1 - include all enrollees with non-zero earnings in any one or more quarters of the year. Rule 2 - include only those enrollees with non-zero earnings in all four quarters of the year.

The All Programs section of the table includes all occupational programs offered by the five community colleges in the fall 1984 semester.

This table represents a composite of all five institutions because each one was promised anonymity in return for participation in the demonstration project. A format such as this can be given to administrators of any vocational education institution with only the former students in that particular institution's occupational programs. Anonymity can be accomplished by censoring all cells with fewer than three cases, and by subsequently reviewing the tabulations to assure that no former student's identity was revealed.

State UI Wage Records

Table 5 gives employment and earnings by program for 1984 community college first-time enrollees using **only** state UI wage records. Table 5 reflects data for four years. Additional years can be added at any time. Table 5 addresses two typical questions that are asked about employment and earnings:

- Do former students work in the state where they had attended school?
- How much did they earn each year?

The first three columns of Table 5 reveal the actual reported annual earnings of former students who had reported earnings during **any** one or more quarters in a designated year. The second set of three columns displays the annual earnings for **only** those former students who had reported earnings in **each** of the four quarters of the designated year. As was pointed out in **Chapter Five**, these two sets of figures (i.e., those employed all four quarters versus those employed one or more quarters) paint remarkably disparate employment and earnings pictures.

Program analysts can use a table similar to Table 5 to analyze employment and earnings outcomes to compare the following:

- programs within one institution;
- programs across many institutions within the state; and
- total results (all programs) across institutions.

Program analysts can also use the data to compare to occupational data from the labor market studies conducted by the SESA or from occupational information collected and disseminated by the State Occupational Information Coordinating Committee (SOICC). This comparison will tell how well the former postsecondary vocational students are doing in relationship to entry-level salaries and average salaries for the specific occupation.

The second step in building the comprehensive data platform is to add any other administrative data sources of employment information such as:

- adjacent-state UI wage records data;
- U.S. Office of Personnel Management file data for Federal civilian employees;
- U.S. Department of Defense file data for military personnel; and
- any other sources of data such as U.S. Postal Service administrative records.

The information from Table 5 plus the data from three additional sources are presented in Table 6. Censoring all cells with fewer than three cases is represented in Table 6 by a "C" in the appropriate category. Such censoring should apply to any instance when there are fewer than three cases for the particular unit of analysis to prevent identification of a particular student, institution, etc.

TABLE 6
Employment and Earnings by Program for 1984 Community College First-Time Enrollees
(All Participating Institutions)

PROGRAM: SECRETARIAL SCI (Enrollment: 275)

	Own State Wage Records (1)						US Office of Personnel Management (2)			US Dept of Defense Manpower Data Ctr (3)	ADJACENT STATES RECORDS (4)		
											State 1	State 2	State 3
Year	# Employed in some qtr	Percent Employed	Mean Earnings	# Employed all 4 qtrs	Percent Employed	Mean Earnings	Number Employed	Percent Employed	Mean Earnings	Began military svce FY1985 - Mar 1990	Number Employed	Number Employed	Number Employed
1987	180	65%	$ 9699	125	45%	$ 11901							C
1988	174	63%	$ 10665	109	40%	$ 14333							
1989	162	59%	$ 13179	109	40%	$ 16989							
1990	152	55%	$ 13466	93	34%	$ 17443	24	9%	$ 19323	C (5)	19	6	

PROGRAM: REAL ESTATE (Enrollment: 142)

	Own State Wage Records (1)						US Office of Personnel Management (2)			US Dept of Defense Manpower Data Ctr (3)	ADJACENT STATES RECORDS (4)		
											State 1	State 2	State 3
Year	# Employed in some qtr	Percent Employed	Mean Earnings	# Employed all 4 qtrs	Percent Employed	Mean Earnings	Number Employed	Percent Employed	Mean Earnings	Began military svce FY1985 - Mar 1990	Number Employed	Number Employed	Number Employed
1987	93	65%	$ 26842	78	55%	$ 29471							C
1988	95	67%	$ 26239	71	50%	$ 33291							
1989	90	63%	$ 29068	68	48%	$ 33843							
1990	88	62%	$ 31976	64	45%	$ 37815	5	4%	$ 37383	C	C	C	

ALL PROGRAMS (Enrollment: 1631)

	Own State Wage Records (1)						US Office of Personnel Management (2)			US Dept of Defense Manpower Data Ctr (3)	ADJACENT STATES RECORDS (4)		
											State 1	State 2	State 3
Year	# Employed in some qtr	Percent Employed	Mean Earnings	# Employed all 4 qtrs	Percent Employed	Mean Earnings	Number Employed	Percent Employed	Mean Earnings	Began military svce FY1985 - Mar 1990	Number Employed	Number Employed	Number Employed
1987	1084	66%	$ 12917	743	46%	$ 16308							11
1988	1073	66%	$ 14018	712	44%	$ 18372							
1989	1010	62%	$ 16175	685	42%	$ 20488							
1990	974	60%	$ 17297	589	36%	$ 22701	153	9%	$ 26850	18	110	22	

NOTES: (1) Own state employment figures calculated using two rules. Rule 1—include all enrollees with non-zero earnings in any one or more quarters of the year. Rule 2—include only those enrollees with non-zero earnings in all four quarters of the year.

(2) Federal OPM statistics based on December 1990 data.

(3) U.S. Dept. of Defense Manpower Data Center statistics based on fiscal year 1985 through March 1990 data.

(4) State 1 statistics include all enrollees employed at any time between first quarter 1990 and second quarter 1991. State 2 statistics include all enrollees employed at any time between third quarter 1990 and third quarter 1991. State 3 statistics include all enrollees employed first or second quarter 1987.

(5) The letter "C" indicates that a cell has been censored because fewer than three observations are found in this cell. This is necessary to comply with confidentiality requirements.

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The comprehensive data platform allows practitioners and program analysts to:

- review the overall picture of employment and earnings outcomes from all the available data sources;
- analyze the findings among the programs; and
- propose related questions raised by the data for policy and management purposes.

Data Analysis

The purpose of data analysis is to determine the employment and earnings outcomes related to vocational education programs. Data analysis will help to provide answers to:

- "consumer rights" questions;
- policy questions; and
- questions regarding the attainment of postprogram performance standards.

The issues that were raised repeatedly by educators that need to be considered in the data analysis phase include:

- differences in **student demographics** across programs within an institution and across institutions in the state;
- **labor market dynamics** such as discriminatory practices that may influence the employment opportunities of women and ethnic minority students; and
- **local economic conditions** such as the current recession in which even people in highly skilled jobs have experienced job loss, including professional workers and middle-level managers.

As has been said numerous times in the text of this report, conducting multivariate analysis to determine the relationship between various factors is needed to ensure that the entire picture is being presented to policymakers, administrators, and educators for consideration of future action.

Additional questions can arise from data analysis. For instance, the demonstration project found that the earnings of former female students were significantly lower than earnings of former male students which introduced the following question:

> Why are more women not being encouraged towards careers in the higher paying occupations and away from the lower-paying occupations that offer little advancement or training for pursuing work in new fields?

Of course, the interests of the women must be considered when providing career counseling. But biases on the part of counselors or instructors regarding women's roles can play a part in the career counseling women receive.

Interpretation of Data

The authors of this report have frequently cautioned the readers about careful interpretation of data. This holds true for analysts examining data for programs within an institution or in making comparisons among institutions within the state. Preliminary data often present a picture that needs more clarification which longitudinal data may be able to provide, such as in trends over time and the effects of the trends on the labor market experiences of former students. Data analysis should not be done in a vacuum, especially with postprogram outcomes of vocational/technical education.

Before interpreting data, review the following checklist:

1. **Review questions that need to be answered. (See Chapter Three for examples of typical questions that prospective students, policymakers, and educators may have.)**

2. Note differences in reporting between public and private postsecondary vocational education institutions.

3. Develop a common core of data elements which would permit more routine tabulations of information for "consumer rights" purposes.

4. Consider linking data about community college enrollees with information about subsequent enrollment in four-year colleges and universities, especially for students who obtain associate degrees.

5. Use longitudinal data for refined multivariate analysis to discover reliable predictors of employment and earnings differences.

6. As contract and temporary employment become more common, the challenges in earnings measurement will increase. Consider how these changes in the job market will affect the accuracy of employment and earnings outcomes in the state. Seek data on "contingency" workers from SESAs and SOICCs for comparison purposes in data analysis.

7. Be sure to use statistical data as a starting point in the investigation of workplace experiences of former students along with contextual factors such as employment opportunities in the local economy.

8. Remember that the choice of unit(s) of analysis predetermines the types of findings that can arise. Also, the smaller the unit of analysis such as a particular semester's degree recipients in a single school's curriculum specialization the more likely it is that censoring of some types of data may be necessary to protect the anonymity of former students.

9. In analyzing earnings data, review the employment rates of the students in the data base as the demonstration project found that differences in outcomes often occurred in labor force participation rates, rather than in the earnings of those students who continued to work.

10. When releasing information gained from data analysis to the public, a rule of thumb is that percent employed and average earnings figures should always be carefully drawn from the same student population and be presented together. Otherwise, the public will be receiving a mixed bag of apples and oranges and misunderstanding can be the result.

In conclusion, using administration wage records to track the workplace outcomes of former students present unique opportunities for data collection and analysis in the postsecondary vocational education community and challenges in the accurate interpretation of the data. Practitioners and program analysts are encouraged to use the knowledge and experience gained from the demonstration project as described in the report as well as the references listed in the Endnotes to develop a system for linkage between institutional and administrative records.

ENDNOTES

1. See: King, Christopher T. (1987). Performance Standards in Job Training and Job Placement Programs. Washington, DC: National Association of Counties. (35 pp.); and, in chronological order: Stevens, David W. (1981). "Assessing the effectiveness of vocational education and CETA programs through the use of routinely available administrative data." In The Federal Role in Vocational Education: Sponsored Research. Washington, DC: National Commission for Employment Policy. (pp. 185-213); Stevens, David W. (1983). "Outcomes for vocational education: Economic perspectives." In McKinney, Floyd L. & Fornash, Patricia (Eds.). Selected Evidence Supporting or Rejecting Eighteen Outcomes for Vocational Education. Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University. (pp. 185-215); California Community Colleges (1984). Placement Rate Concept. Sacramento, CA: The Chancellor's Office, California Community Colleges. (67 pp.); Stern, David (1988). Performance-Based Public Policy Toward Postsecondary Vocational Education: Some Economic Issues. Berkeley, CA: The National Center for Research in Vocational Education. (41 pp.; draft); Butler, Eric Payne (1988). "The search for a bottom line in education and training: What lessons are offered by the Job Training Partnership Act?" Waltham, MA: Brandeis University. (5 pp.); National Commission for Employment Policy (1988). Evaluation of the Effects of JTPA Performance Standards on Clients, Services, and Costs. Research Report Nos. 88-15, 88-16, and 88-17. Washington, DC; Stevens, David W. (1989). Using State Unemployment Insurance Wage-Records to Trace the Subsequent Labor Market Experiences of Vocational Education Program Leavers. Washington, DC: National Assessment of Vocational Education, U.S. Department of Education. (56 pp.); Hoachlander, E. Gareth, Choy, Susan P., & Brown, Cynthia L. (1989). Performance-Based Policies Options for Postsecondary Vocational Education: A Feasibility Study. Washington, DC: National Assessment of Vocational Education, U.S. Department of Education. (136 pp.); Goodwin, David (1989). Final Report Volume IV: Postsecondary Vocational Education, Washington, DC: National Assessment of Vocational Education, U.S. Department of Education. (pp. 107-129); Office of Technology Assessment (1989). Performance Standards for Secondary School Vocational Education: Background Paper. Washington, DC: Science, Education, and Transportation Program, Office of Technology Assessment, U.S. Congress. (80 pp.); Center on Education and Training Employment (1990). Vocational education performance standards. ERIC Digest No. 96. Columbus, OH: Clearinghouse on Adult, Career, and Vocational Education, The Ohio State University. (2 pp.); Baj, John & Trott, Charles E. (1991). A Feasibility Study of the Use of Unemployment Insurance Wage-Record Data as an Evaluation Tool for JTPA. Washington, DC: National Commission for Employment Policy. (118 pp.); Hill, Paul T. (1991). Performance standards, accountability, and local service delivery. (2 pp.; dated March 15 with no other identifying information); Harmon, Tim (1991). JTPA performance standards: Briefing for Illinois State Board of Education Committee of Practitioners. Springfield, IL:

Job Training Programs Division, Department of Commerce and Community Affairs. (8 pp.); Bross, Nancy (1991). Issue Paper: Using Unemployment Insurance Wage Record Data for JTPA Postprogram Performance Standards. Chapel Hill, NC: Research and Evaluation Associates, Inc. (21 p. + appendices); and, Bross, Nancy (1991). Findings of the Technical Workgroup on Using Unemployment Insurance Wage Record Data for JTPA Performance Standards. Chapel Hill, NC: Research and Evaluation Associates, Inc. (15 pp. + appendices).

2. Colorado and Florida are the leaders in sustained commitment; but Arizona, Illinois, Maryland, Missouri, Ohio, Oklahoma, Utah, Washington, and Wisconsin have each contributed to the refinement of either the process or the content of what is presented here.

3. This demonstration project was one task of a contract performed by Research and Evaluation Associates for the U.S. Department of Education on "Consumer Rights Information in Postsecondary Education" (Contract No. EALC890010).

4. Due credit should be given to pioneering efforts by colleagues in Arizona, Colorado, Florida, Missouri, Ohio, Washington and Wisconsin, who created merged data sets similar to those that are described here. The original aspects of the just completed demonstration are its introduction of measures of local economic conditions to adjust employment and earnings outcomes, its diagnostic approach to meeting the interests of multiple constituencies, and the length of post-program coverage that is investigated.

5. America's Choice: High Skills or Low Wages! National Center on Education and the Economy, Rochester, New York, 1989. Office of Technology Assessment, Retraining America's Workers, Washington, DC, 1991. The Learning Enterprise, America Society for Training and Development, Alexandria, VA, 1989.

6. P.L. 98-369, Section 1137.

7. Section 1137 of the Social Security Act was adopted pursuant to the Deficit Reduction Act of 1984. This section requires each state to establish and maintain an income and eligibility verification system that incorporates Unemployment Compensation, Aid to Families With Dependent Children, Food Stamps, and Medicaid Assistance features.

8. Michigan's Employment Security Commission requires covered employers to submit quarterly wage reports only in compliance with state and Federal laws requiring an "Income and Eligibility Verification System" (IEVS)--the information is not used in the day-to-day administration of the State's unemployment compensation program.

9. Carl D. Perkins Vocational and Applied Technology Act of 1990, Section 115(a).

10. Ibid, Section 115(b)(2)(D).

11. Ibid, Section 115(c).

12. Gene Streagle, a high school principal, quoted in "Low Grades for Md. Report Card," The Washington Post, November 11, 1991, p. B1.

13. Ibid.

14. Ibid.

15. Richard D. Wood, Chairman of the Board of Eli Lilly and Company, headquartered in Indiana, quoted in a one-page advertisement titled "Corporate Roundtable: Competing in a New World," The Washington Post, November 26, 1991, p. A18.

16. The Assistant State Superintendent who is in charge of Maryland's School Performance Program is quoted in The Washington Post articles as saying, "we are considering whether we're getting a pass-through phenomenon [in response to a 96 percent pass rate standard for grades one through six]. That was one of the standards most systems met this year and last year, which makes you say, 'Whoa. How are they getting there so fast?'" Refer to Hill's admonishment, cited in the Appendix to this report, that states,"inappropriate comparisons of performance between dissimilar entities can distort management behavior."

17. The U.S. Department of Labor has drafted regulations that would offer each state a recommended procedure for making administrative records available to external parties. The proposed regulations appear in the March 23, 1992 issue of the Federal Register.

18. The pace and content of change is so state specific that only a minimal attempt is made here to describe how individual states have responded to, or in some cases anticipated, the 1990 Perkins Act's language. Florida and Oregon have taken a legislative approach to creation of an integrated multiagency tracking capability. Illinois and Maryland are relying upon administrative direction to achieve the same objective.

19. One frequently asked question cannot be answered directly, "Did the former students get jobs using the skills they acquired at the community college?"

20. John Baj, co-author of A Feasibility Study of the Use of Unemployment Insurance Wage-Record Data as an Evaluation Tool for JTPA, first made this point in conjunction with his matching of interstate data for Job Training Partnership Act performance standards investigations.

21. The Job Training Partnership Act system is deliberating this issue. It is important to establish and maintain a dialogue with those who are responsible for policy decisions about this matter. The National Commission for

Employment Policy, Northern Illinois University's Center for Governmental Studies, and the Division of Performance Management and Evaluation in the Employment and Training Administration of the U.S. Department of Labor are important contacts on this issue.

22. Unit record information about the former students was obtained from the state's community college oversight agency, with written authorization from an administrator at each of the five colleges.

23. Florida's Education and Training Placement Information Program collects U.S. Postal Service information as well. No attempt to pursue this administrative data was made during the demonstration project. If future requests are anticipated, then the importance of a consolidated submission must be considered. The issue is identical to that associated with U.S. Office of Personnel Management, U.S. Department of Defense Manpower Data Center, and adjacent state data requests.

24. Actually, it can only be said that these were first time enrollees at the particular community college that reported this status. A student may have been previously enrolled at another postsecondary institution in this state or in another state.

25. Here, "reported" earnings refers to the quarterly reports submitted by the state's employers who are required to comply with the unemployment compensation law. There is no self-reporting of earnings by former students included in this table.

26. This may be due to many different reasons, such as the volatility of the real estate market during this period.

27. It is surprising that the average earnings of these former students increased from 1988 to 1989, and then again from 1989 to 1990. This is the point at which additional information is needed to interpret this apparent contradiction of general conditions in the real estate sector. Did these people actually work in real estate? Did they work only in real estate? Would their earnings level be expected to reflect changes in the flow of sales commissions? Some evidence pertinent to these questions can be extracted from the wage record data, when they are combined with available information about industry affiliation. Additional information would have to be sought through other means.

28. The issue becomes complicated very quickly. Reference to year-round employment does not mean that the former students are employed full-time each week throughout the year. The selection criterion used here only requires that some earnings were reported in each of the four quarters in a designated year. No floor level of earnings was established. Tests were conducted using the quarterly earnings equivalent of full-time employment at the applicable minimum wage rate as a threshold criterion. This lowers the

number of former students who are reported as employed. Also, refer to Step 3 in Chapter Seven to the section entitled multiple wage records, that quarterly earnings can arise from one job, sequential jobs, or concurrent jobs. No attempt has been made in the platform tabulation to distinguish among these circumstances.

29. It must be recognized that voluntary cooperation in facilitating arms-length performance measurement may not occur. In this case, mandatory reporting of a consistent core of data elements will be required, if the performance measurement goal is taken seriously.

30. See: Florida Education and Training Placement Information Program (1990). Annual Report. Tallahassee, FL: Florida Department of Education. (76 pp. + appendices).

31. Research and Evaluation Associates (1991). Consumer Information in Postsecondary Education: Case Studies of Three States, p. 2-6.

32. Research and Evaluation Associates (1991). State-Level Measurement of Performance Outcomes in Postsecondary Vocational Education, Volume I: A Summary of State Policies, submitted to the U.S. Department of Education, Washington, D.C, p.ii.

33. Ibid, p.6.

34. Ibid, pp. 10-15.

35. Pfeiffer, Jay J., Director of Florida's Education and Training Placement Information Program (FETPIP), and David W. Stevens, Director of the University of Baltimore's Regional Employment Dynamics Center, State and National Perspectives of Whether and How to Attempt to Use State UI Wage Records, for Research and Evaluation Associates (1992), p. 9.

36. Statistical data that do not reveal the identities of individuals or employers may intentionally affect the future rights, benefits, or privileges of an entire class of individuals. This is one of the important reasons for undertaking evaluative, or diagnostic, research--to advance management effectiveness. This is why the U.S. Department of Labor's proposed regulations for the release of confidential records would require states to inform both claimants and employers that UI wage record data might be used for purposes other than the day-to-day processing of claims. See: Federal Register, March 23, 1992, Section 603.15 (a) and (b).

37. Ibid, p.7.

38. Ibid.

39. Ibid, p. 10

40. Ibid.

41. The Family Educational Rights and Privacy Act of 1974 (P.L. 93-568, 20 USC 1232g) is commonly referred to as "The Buckley Amendment."

42. Pfeiffer, Jay J. and Stevens, David, W., op cit., pg. 12.

43. Ibid, pp. 12-14.

44. Ibid, p. 5.

45. See Section 603 of the March 23,1992 issue of the Federal Register for proposed regulations for the release of confidential administrative records issued by the U.S. Department of Labor.

46. See: Ohio Bureau of Employment Services (1991). Confidentiality of Bureau information. Administrative Directive No. 5-91. January 10. Columbus, OH: Author. (2 pp.); and Policy on Release of Confidential Information, which is appended to the Directive; Illinois Department of Employment Security (1989). Final Report and Recommendations of the Sub-Committees of the IDES Data Release Policy Committee. Springfield, IL: Author; and Illinois Department of Employment Security (undated). Data Release Information Booklet. Springfield, IL: Author. Also, see David W. Stevens' chapter in a forthcoming volume by the National Commission for Employment Policy on the use of State UI wage records for JTPA follow-up purposes, for state-by-state examples.

47. Again, the definition of earnings is state specific. Most states require a reporting of the cash equivalent value of non-wage or salary compensation (e.g., meals, tips, etc.). The accuracy of such reporting is uneven. Bonuses, which are becoming an increasingly important part of total compensation, are reported during the quarter in which they were received. This introduces a quarter-to-quarter unevenness that has not been examined to date, which may introduce a significant bias if only one quarter of data is used for performance measurement purposes (e.g., in Florida's Education and Training Placement Information Program).

48. Employers actually report two identification numbers--their Federal Employer Identification Number and the state-specific number assigned by the state's unemployment compensation agency. An employer with facilities in more than one state will have multiple state-specific employer identification numbers.

49. In most states employers are permitted to report using a geographic location code other than the specific site at which a particular employee or group of employees work. For example, a headquarters address, or even a service-bureau address, can be used. These state-specific practices are being reviewed because of the increased interest that is being shown in knowing how a company's total employment is distributed geographically within a state.

50. Using a four-digit Standard Industrial Classification code.

51. Alaska is an exception; a state law requires occupational reporting in support of native-Alaskan equity interests. Other states have tested the concept. See: State Job Training Coordinating Council/Council on Vocational Education (1988). Occupational Identifier Project: Legislative Report. Tallahassee, FL: Author. (56 pp. + appendices). Washington's State Board for Community and Technical Colleges, and Washington's Employment Security Department, have used staffing pattern information by Standard Industrial Classification code, collected by the Bureau of Labor Statistics' SESA Occupational Employment Statistics Program, to determine whether former students are working in an industry that includes occupations that utilize the skills associated with their occupational preparatory course work. This requires a match of Classification of Instructional Programs (CIP) codes and Standard Industrial Classification (SIC) codes. See: Washington State Board for Community College Education (1990), op cit, pp. B-4 and B-5.

52. Employers have not adopted a uniform occupational classification system (e.g., the Dictionary of Occupational Titles), which means that someone would have to translate employer classifications into a common classification. Even if this is done, many question the adequacy of any existing occupational classification system to serve the education community's needs. See: Stevens, David W. (1991). Canada's National Occupational Classification Taxonomy. Washington, DC: Advisory Panel on Revision of the Dictionary of Occupational Titles, U.S. Department of Labor. Florida's Education and Training Placement Information Program (FETPIP) manages a comprehensive employer-contact activity to collect occupational information directly. See: FETPIP (1990), op cit, pp. 30-35.

53. Other exclusions include philanthropic organizations, some small agricultural employers, and some nonprofit agencies.

54. Late reporting occurs, which introduces a tradeoff between the timeliness of data availability and accuracy of coverage. The author is undertaking an investigation to determine the implications of late reporting for performance measurement uses of the data.

55. Maryland's wage-record data are provided to the University of Baltimore's Regional Employment Dynamics Center for archiving during the first week of the fourth month after a quarter ends.

56. Research and Evaluation Associates, Draft report, The Use of State Wage Records as Performance Outcome Measures: An Overview for Policymakers, 1991, p. 6.

57. The salary amount shown is the annual rate for full-time, full-year employment in the designated occupation taking within-grade step increases into account.

This figure cannot be interpreted as the actual amount of money that has been paid to the employee during a particular year.

58. During the 1980's, and continuing into the 1990's, there has been a substantial increase in the use of vendor services by the Federal government, which has transferred many of those who are fulfilling traditional government responsibilities from the Federal payroll to vendor payrolls, including temporary help agencies.

59. Baj and Trott (1991), op cit, pp. 15-16.

60. Smith, Gregory P. (1989). A Longitudinal Tracking Study of Short-Term Education and Employment Outcomes of Colorado Community College Graduates. Denver, CO: Community College and Occupational Education System; Strong, Merle E. & Jarosik, Daniel (1989). A Longitudinal Study of Earnings of VTAE Graduates. Madison, WI: Vocational Studies Center, School of Education, University of Wisconsin; Washington State Board for Community and Technical College Education (1990). Vocational Outcomes in Washington Community Colleges: Baseline Report. Olympia, WA: Author; and Pfeiffer, Jay J. (1991). FETPIP status update. Memorandum. Tallahassee, FL: Florida Education and Training Placement Information Program, Florida Department of Education.

61. See: Stevens, David W. (1991). The Confidentiality Provisions of State Unemployment Compensation Laws. Washington, DC: National Commission for Employment Policy. (27 pp.). This paper provides an accurate compilation of the confidentiality requirements found in each of the 50 state unemployment compensation laws, which control the availability of SESA wage record data. This report documents the fact that no state law prohibits the use of wage-record data for appropriate performance measurement purposes, if individual and enterprise anonymity are assured. Having said this, many of the state laws grant the SESA Administrator discretionary authority to determine whether this requirement is met.

62. See: Florida Education and Training Placement Information Program (1990), loc cit.

63. The State Board for Community Colleges in one state, and the Coordinating Board for Higher Education (in cooperation with the American College Testing Service) in the other state, provided the school-based unit-record information after appropriate confidentiality assurances had been given.

64. The Association of Private Career Schools in each of the two cooperating states provided a forum for the author to recruit volunteers from among the Association's membership.

65. The author has already archived the universe of wage record data for the two cooperating states, covering the period 1983 through 1989 (third quarter

records only for each year) for one state and covering 1985 second quarter through 1991 second quarter (including all intervening quarters) for the second state. See: Middlebrooks, Charles O. & Stevens, David W. (1991). A multi-state wage-record archive: Simultaneous achievement of economies of scale, quality control and data base security. Building Information Partnerships: Conference Proceedings. Washington, DC: National Governors' Association.

66. Washington State Board for Community and Technical College Education (1990), loc cit.

67. Recent creation of the Career College Association, through a merger of the National Association of Trade & Technical Schools and the Association of Independent Colleges and Schools, may result in some inertia to create a common core of data items that many member schools will voluntarily adopt. The self-interest motive for such action would be to provide reliable documentation of student characteristics, curricula offered, certificates and degrees awarded, and post-program employment and earnings achievements of former enrollees. This report suggests that voluntary career school adoption of the model approach that is described could be expected to have an important "policing" effect on those career schools that choose not to provide the public with credible postprogram outcomes information.

68. There is widespread confusion about a school's authority to release student transcript information that includes a social security number identifier. The Family Educational Rights and Privacy Act of 1974 (P.L. 93-568, 20 USC 1232g), commonly referred to as "the Buckley amendment", is often alleged to prohibit the release of personally identifiable information without the prior written consent of the former student. In fact, prior consent is not required if the disclosure is for the purpose of evaluating Federal programs, or for the conduct of studies that are intended to improve the educational process, if the third-party receiving the information to perform the analysis agrees in writing not to redisclose the former student's identity. Also see Stevens (1991) for comprehensive documentation of how the SESAs are dealing with this issue in a noneducation context. An extraordinary paper on this topic is Reynolds, Paul D. (1991). Privacy and Advances in Social and Policy Science: Balancing Present Costs and Future Gains. Revision of a paper originally presented at a Conference on Data Access Through Disclosure Limitation. Convened by the National Academy of Sciences. Washington, DC. March 1991.

69. Fictitious numbers may be easily detected, if the reporting party does not know that the Social Security Administration uses specific digits for accuracy auditing purposes, and that regional sequences of numbers are used.

70. The Internal Revenue Service now requires a social security number to be reported for each dependent who is claimed on a Federal tax return. This permits the IRS to compare tax returns to determine if one person is being claimed as a dependent on more than one tax return. The author does not know how this requirement has affected the incidence of coverage to date.

71. According to Jay Pfeiffer in Florida, there are no known studies of the accuracy of social security numbers for the purpose of matching information between data bases. However, Florida has developed an algorithm that it used to test the validity of social security numbers reported in Florida. This procedure "kicks out" 2.5 to 3 percent of the reported social security numbers.

72. Reynolds, Paul D. (1991), loc cit, distinguishes among active informed consent, passive informed consent, and proxy active informed consent. On the one hand, active informed consent typically is assumed to require the well known conditions of rational judgment, full information about the "conditions associated with the decision," an absence of coercion, and full awareness of the potential consequences that could result from offering the consent. Passive informed consent, on the other hand, is simply assumed in the absence of any contradictory action. And proxy active informed consent allows an intermediate authority (e.g., a teacher, school administrator, or school board) to make an explicit determination that passive informed consent is applicable.

73. An anomaly in the interpretation of CIP-coded data arises from the common emphasis placed on nonduplication of existing programs in the review of new program proposals by state education authorities. This results in "creative" descriptions of programs that justifies placing them in a CIP code that will allow approval. The Carl Perkins Act's emphasis on new activities creates a similar incentive to "repackage" existing activities so they qualify for Federal funding.

74. Loretta Seppanen, who has used CIP-coded data in research conducted for Washington's State Board for Community and Technical Colleges, says that "...to look at the data at CIP level is not useful for policy decision making--too much data. We have 17 groupings that are useful--mostly CIP at 2-digit with some variation."

75. This is exactly what happened in Arizona's ill-fated attempt to rush matched school-based and SESA wage record information into the public domain. See: Hoachlander, Choy, & Brown (1989), loc cit.

76. An alternative to increasing the level of investment in accuracy has sometimes been to invest in the development of figures that are consistent with the administrative outcome that is desired. For example, so-called "supply and demand" figures published by a State Occupational Information Coordinating Committee (SOICC) might be used when they are supportive of a desired management strategy, but they might be challenged with another source of data--such as a costly local survey of employers--if the SOICC information contradicts the desired outcome.

77. This is only true if accuracy is important; i.e., if the data to be collected will be used to support visible policy and management decisions.

78. Colorado, Florida, and Washington exemplify this approach at the secondary and postsecondary levels.

79. There is no intention here to assign motives to this inaction. Owners of small, start-up businesses are often overwhelmed and less informed about required actions. Motives do not matter here. What matters is that nonreporting translates into an inability to retrieve information about the employees of that business.

80. See endnote 48, which distinguishes this state-specific identification number from a firm's Federal Employer Identification Number, which is used for Federal tax reporting purposes. This distinction is important if there is any intention to attempt interstate matching of wage records to determine whether an employee is still working with the same employer, but in another state. It is unlikely that this issue will matter to most readers.

81. There are obvious nuances to this issue. Employees who travel among sites, or who have no assigned home-base, must be reported through some unit. The Bureau of Labor Statistics, in cooperation with each of the SESAs, is introducing a Business Establishment List program, which encourages employers to report the total number of employees by work site each quarter. However, this is not the same as reporting **each individual employee** by work site. Most multi-establishment businesses know the specific profit-center to which each employee is assigned. Virtually all multi-establishment businesses have automated personnel data systems. There would be little burden placed on covered employers if a SESA required routine reporting of employee earnings by work site. However, there is no particular benefit to a SESA's unemployment compensation unit in requesting this information. Any initiative to introduce such a requirement must come from a SESA's labor market information unit or from the state's legislature, which has a compelling interest in being able to more accurately monitor local labor market dynamics within the state.

82. Bonuses are awarded at specific times, which means that quarter-to-quarter earnings profiles may differ by substantial amounts. Readers must determine how this unevenness will affect what they want to know, and how this translates into the selection of one or more quarters of wage-record data for postprogram measurement purposes.

83. There are some tricks of the trade to sort out these possible circumstances. For instance, appearance of one employer identification number in sequential quarters, accompanied by the appearance of a second employer identification number in only one of the quarters, hints that the multiple wage records may represent sequential employment. However, there are no foolproof ways to disentangle the possibilities.

84. Florida and Washington require employers to report a time-unit of work, as well as total quarterly earnings; but many observers in each state question the accuracy of this data element, since it is not used in the administration of the SESA's own unemployment compensation program.

85. The U.S. Department of Labor created an Advisory Panel on Revision of the Dictionary of Occupational Titles last year to review what changes might be needed in the DOT as a result of these new industrial relations practices ongoing technological change, and international events.

86. Data processing was handled at the University of Baltimore's Regional Employment Dynamics Center data processing facility, which includes a dedicated Hewlett-Packard 9000 Series 370 Workstation, 2.4 gigabytes of hard disk storage, a tape drive, and a 650 megabyte rewritable optical disk drive.

87. For example, an IBM mainframe computer would generally not be able to read a nine-track tape written on a Hewlett-Packard workstation, because the IBM expects EBCDIC characters with a particular header, while the HP typically writes ASCII characters with no header. Use of a nine-track tape with fixed record length is a practical solution in most cases. ASCII-EBCDIC conversion utilities are available.

88. There is a tradeoff between this ease of response and the consequences of releasing data elements that are not required to satisfy the third-party request.

89. Florida's 1990 Annual Report, op cit, p. 8, exemplifies how an experienced management team approaches this issue.

90. The higher education coordination authority can link the former student data with subsequent enrollment in four-year institutions in the state, which neither of the other sources can do. The individual community colleges maintain data elements other than those that are submitted to the state. So, a preference among the three possible sources might arise from these considerations.

91. Remember that it will be necessary to "sell" the concept of independent third-party assessment. Only the most confident of managers will voluntarily relinquish control over performance measurement responsibilities. This risk-aversion can be limited, to some extent, by promising institutional anonymity, and then honoring that commitment without exception. This is the approach that was taken for demonstration purposes. Of course, it is important to think through the consequences of offering anonymity--this may not be consistent with the intended purpose for the postprogram outcomes measurement.

APPENDIX

OUTCOME MEASURES VERSUS PERFORMANCE STANDARDS

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Concepts

An outcome **measure** must be distinguished from a performance **standard.**[1] An outcome measure can be any quantitative or qualitative indicator that calibrates different levels of accomplishment. A performance standard identifies a threshold level of achievement using this measure, which then serves as a target.

There has been substantial confusion about both the intent and practice of setting performance standards. Some view a standard as a goal that is virtually unreachable, like the artificial rabbit at a greyhound racetrack, and which serves as an incentive to perform at the highest level possible. Others view a performance standard as a minimum level of accomplishment, a finish line that, once crossed, pursuit stops. Still others interpret a performance standard as a straightforward management tool, which lets all parties know ahead of time what are considered to be satisfactory and unsatisfactory performance levels.

These interpretations leave substantial room for disagreement about what steps management should take when actual outcomes are known. Many fear performance standards as a punitive device, having seen an imbalance in management responses to deficient versus exemplary performance. Some question the fairness of performance standards practices as they actually unfold, arguing that they often fail to take into consideration the influence of factors over which little or no control is exercised. Each of these issues has been addressed in Chapter Four of this report.

The treatment of performance measures and standards that is offered here is necessarily generic. In any specific application, each measure and standard must be identified with a particular unit of analysis (e.g., a student, all enrollees in a course, completers of a sequence of courses, all school leavers, etc.), and with respect to a precise context in time (either a point-in-time or a specific time interval).

Historical Precedents

Three major phases in performance standards implementation in federally funded employment and training programs have been identified.[2] The first phase, from 1961 to 1973, rewarded past performance and a vendor's proposal writing skills. During this period, contracts were awarded based more on historical performance than on present competence or skills. This is not the typical definition of performance-based funding, in the sense that a flow of funds is made contingent upon performance after a specified starting date.

A second phase was ushered in with passage of the Comprehensive Employment and Training Act (CETA), which shifted from historical performance as a funding criterion to a needs-based allocation of Federal funds. King concludes that during this second phase:

> ...there were no particular performance expectations or requirements placed on local efforts beyond reporting requirements;...
>
> In the mid-1970s there were signs of change. The Department of Labor began to establish goals and expectations of varying degrees of specificity, including "performance indicator clusters"...

> Until the 1978 CETA Reauthorization Amendments (P.L. 95-524), performance standards were not mentioned in the authorizing legislation for employment and training programs. The 1978 Amendments introduced performance standards, but were silent on their implications.[3]

The third phase began with passage of the Job Training Partnership Act (JTPA) in 1982. Federal JTPA funds were then allocated on both a needs and performance basis, with the greatest weight continuing to be placed on need criteria. King reports that:

> ...full-scale implementation of performance standards took place in Program Year 1984....With the provision of [incentive] awards across the country in the fall of 1985 - based on PY 1984 performance--the reality of these new provisions began to take hold.
>
> Application of sanctions for failure to meet or exceed standards for two years occurred for the first time in late 1986. With the completion of the first two-year performance management cycle, program accountability via performance standards, incentives and sanctions had truly arrived.[4]

Practitioners and policymakers can benefit from the lessons that have been learned in JTPA.[5] However, all interested parties must maintain a balanced sensitivity to both important differences and common interests. A poorly informed rush to impose a single uniform model on all three systems would be a serious mistake. The following sections discuss principles, measurement processes, and the relevance of employment and earnings outcomes measures.

Principles

Among the important performance measurement perspectives identified in the available literature[6] are:

King--

- Performance standards should be designed primarily to **encourage good performance**, not to punish deficient performance;
- Only good performance should be rewarded, not good intentions;
- Deficient performance that is clearly attributable to causes beyond a manager's control should not be punished;
- Substantial attention should be given to encouragement of **internal** improvement (competition against own previous performance) without regard to external comparisons;
- Performance standards derived through the use of appropriate adjustment models can serve as an effective management tool;
- Numerical performance standards of this type should serve as the beginning point for oversight and management dialogue, not as the ending point; and
- Good performance involves more than meeting, or even exceeding, a performance standard.

Hoachlander--

- Performance measure definitions should be unambiguous;
- These measures should be subject to routine and accurate measurement;
- Only a few measures should be chosen;
- Actual measurement should occur regularly; and
- Resulting data should be made available to all interested constituencies.

Hill--

- Overemphasis of **national** performance standards can weaken **local** accountability practices, if externally required measures are substituted for local process monitoring, and if administrative attention is diverted to a higher management level;
- Uniform standards can promote "gaming"; and
- Inappropriate comparisons of performance between dissimilar entities can distort management behavior.

These principles are reflected in the 1989 postsecondary performance incentive recommendations of the U.S. Department of Education's National Assessment of Vocational Education:

> After studying experiences under the Job Training Partnership Act (JTPA), other state employment and training programs, as well as approaches that states have used in attempting to introduce performance-based elements into their educational systems, NAVE recommends two specific performance incentive mechanisms:
>
> 1. **A performance information system** to disseminate information to students, policymakers, employers, and the public on the performance of vocational education institutions; and,
> 2. **A performance-based funding system** that distributes financial aid to institutions according to performance-based funding formulas.[7]

The Mechanics of Measurement[8]

It has already been stated that a goal in conducting performance measurement and in establishing performance standards is to provide a widely accepted uniform metric of accomplishment. This requires a sensitive balancing of common definition, quality control, and allowance for situational differences.[9] For example, JTPA performance standards "... are constructed using a statistical technique called multiple regression analysis. This process allows multiple local factors to be considered simultaneously and determines the amount of variation in performance--for a given measure--that is independently attributable to each local factor contained in the model."[10]

At the outset, seven JTPA performance measures were specified:

1. Adult entered employment rate;
2. Adult cost per entered employment;
3. Adult average wage at placement;
4. Adult welfare entered employment rate;
5. Youth entered employment rate;
6. Youth positive termination rate; and
7. Youth cost per positive termination.

Each of these seven measures is an **immediate** outcome. Only one of the seven--youth entered employment rate--is still retained today. The others have been replaced by **postprogram** outcomes:[11]

1. Adult follow-up employment rate;
2. Adult average weekly earnings in the 13th week after termination;
3. Adult welfare follow-up employment rate;
4. Adult average weekly earnings for welfare clients in the 13th week after termination; and
5. Youth employability enhancement rate.

To date, these measures have been recorded through state and local JTPA management information systems and telephone follow-up programs. Recently, interest has been building to offer the states an **option** to use SESA UI wage records instead of, or in addition to, the telephone follow-up activity.[12]

This report provides a bridge from this JTPA experience to the education community, particularly to the occupational program sectors of the postsecondary education community.

The Relevance of Employment and Earnings Outcome Measures

Three questions might be asked about measures of employment and earnings for former students:

(1) Are these measures relevant?

(2) Are they important?

(3) Are they sufficient?

Few question the relevance of these measures for judging education's performance. Substantial disagreement arises when the importance of these measures is discussed, particularly with respect to differences in objectives among curriculums and type of institution.[13] No one would defend the sufficiency of these measures for assessing education. Therefore, it is generally acknowledged that measures of employment and earnings are relevant and important, but are not sufficient to document educational outcomes.

Consider selected alternatives[14] to the use of employment and earnings measures of vocational education's performance:

- **Competency Attainment**--such measures are certainly relevant[15], but they too fall short of sufficiency if (1) nothing is known about benchmark competencies that were already in place upon entrance into the vocational education setting (i.e., there is no baseline measure or way to determine the value-added gain due to program participation); or (2) nothing is known about the intention or opportunity to subsequently apply these competencies.

- **Process Accountability**--focusing only on what is done, not on consequences of these actions.

- **Efficiency**--addressing the costs of providing the educational services without reference to the subsequent effects that follow from these resource commitments.

It is apparent that each of these measures--process assessment, cost figures, competency attainment, and employment and earnings--complements the others in providing a more accurate understanding of education's role in our society and economy.

Endnotes

1. See: Hoachlander, Gary (1990). Designing systems of performance measures. Presentation to the National Association of State Directors for Vocational Education. Annual meeting of the American Vocational Association. December 1, 1990.

2. King, Christopher T. (1987). Performance Standards in Job Training and Job Placement Programs. Washington, D.C.: National Association of Counties (35 pp.).

3. King, op cit, p. 12.

4. Ibid, p. 13.

5. The multiple attempts to design a resource allocation formula for the U.S. Employment Service's State Employment Security Agencies system are also instructive.

6. See: King, op cit, p. 18; Hoachlander (1990), op cit, p. 1; and Hill, Paul T. (1991). Performance Standards, Accountability, and Local Service Delivery (2 pp.; dated March 15 with no other identifying information); p. 1.

7. Goodwin, David (1989). Final Report Volume IV: Postsecondary Vocational Education, Washington, D.C.: National Assessment of Vocational Education, U.S. Department of Education, p. 110.

8. This subheading is adapted from King's use of the phrase "The Mechanics of Performance Standards". See: King, op cit, p. 18.

9. Included in this sensitivity is the behavioral quality called common sense. Numerical performance standards should not be carried out in a rote manner. See, for example, Florida Education and Training Placement Information Program (1990). Annual Report: August 1990. Tallahassee, FL: Florida Department of Education. (pp. 6-7). This paper describes the evolution of Florida's 1984 legislative enactment of a performance standard requiring "that 70% of all [public vocational education job preparatory] program completers obtain employment which is related to their training." The spirit of this admonishment is also captured in the following sentence excerpted from an editorial titled "Block That Celebration," which chides overzealous referees for their enforcement of a National Football League prohibition of "on-the-field celebrations that are 'prolonged, excessive or premeditated'": "Legislating good sportsmanship is difficult at best, but when the enforcers aren't versed in the proper uses of what might be called the Wink Factor [emphasis added], then it can get downright ridiculous," The Washington Post, 9-18-91, p. A18.

10. King, op cit, p. 19. The precision of this alleged attribution, especially for different participant cohorts and localities, has been questioned. See: Trott, Charles E., Sheets, Robert, & Baj, John (1985). An Evaluation of ETA's PY85, Title II-A Performance Standards Models and Feasibility Assessment Regarding a Regional/State-Based Modeling Initiative. DeKalb, IL: Center for Governmental Studies, Northern Illinois University; Trott, Charles E., Baj, John, Fahey, Sean, & Sheets, Robert (1987). Development of JTPA, Title II-A Performance Standards Models for the States of Region V. DeKalb, IL: Center for Governmental Studies, Northern Illinois University; and, Baj, John & Trott, Charles E. (1988). State-Based Performance Standards Models. Washington, DC: National Governors' Association.

11. See: Harmon, Tim (1991). JTPA performance standards: Briefing for Illinois State Board of Education Committee of Practitioners. Springfield, IL; Job Training Programs Division, Department of Commerce and Community Affairs (8 pp).; and Baj and Trott, op cit, p. 93.

12. See: Stevens, David W. (1978). Performance measurement in the CETA system. In CETA: An Analysis of the Issues. Special Report No. 23. Washington, DC: National Commission for Employment Policy. (pp. 217-241); and, Bross, Nancy (1991), Findings of the Technical Workgroup on Using Unemployment Insurance Wage Record Data for JTPA Performance Standards, Chapel Hill, N.C.: Research and Evaluation Associates, Inc. (15 pp. + appendices).

13. The Office of Technology's 1989 Background Paper cited in endnote 3 of the main portion of this paper reports that "[a] recent national poll found that nearly 70 percent of the 265 responding school districts were opposed to the use of job placement rates as a measure of student success," p. 34, footnote 20. This statement refers to use of labor market outcomes as a measure. The ERIC Digest document, also cited in endnote 3, makes a stronger statement: "Even if the labor market outcome information could be collected in a valid, unbiased, and accurate manner, many vocational educators would object to such indicators being **the sole measure** of program effectiveness on the following grounds: (1) adopting placement as the **primary** [emphasis added] criterion ignores the multiple goals of vocational education, (2) a large number of economic and personal factors beyond the control of the vocational education system determine the employment of students, (3) a narrow focus on placement encourages programs to admit only those who can be placed and to concentrate on coaching in job placement and interview skills at the expense of vocational skills, and (4) placement rates and other economic indicators measure the gross effect of participation (total place [sic], total earnings) rather than the net effect (the difference between labor market outcomes that occurred when students participated in vocational education versus what would have occurred had these programs not existed)." Advocates and opponents of the use of employment and earnings outcomes measures often shift their position along the continuum from adoption as a measure, through acceptance as **a primary** measure, to the unrealistic extreme

as a **sole** measure of performance. Statistical adjustment models are intended to respond to objections (2) and (3) above. Objection (1) is a "throw away" cliche; no one disagrees. Objection (4) is unlikely to be overcome as a routine practical matter. The remainder of this paper focuses on what **can be done** in a routine way.

14. Omitted here is the long-standing interest in training-related employment. Loretta Seppanen reminded one of the authors that most college-level occupational preparatory students already have a job. This places a premium on being able to determine whether the additional education opens new doors to training-related employment opportunities.

15. Indeed, the Carl D. Perkins Vocational and Applied Technology Act of 1990 requires the adoption of a competency attainment performance standard.